NAVAL POSTGRADUATE SCHOOL
Monterey, California

THESIS

THE EFFECT OF MARINE CORPS ENLISTED COMMISSIONING PROGRAMS ON OFFICER RETENTION

by

William E. O'Brien

June 2002

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This thesis estimates multivariate models to analyze the determinants of retention to ten years of commissioned service and retention until retirement eligibility of Marine Corps officers by commissioning program. Using data from the Marine Corps Commissioned Officer Accession Career file (MCCOAC), logistic regression models are specified to predict Marine Corps Officer retention behavior. The models specify retention as a function of commissioning program, The Basic School (TBS) graduation rank, General Classification Test (GCT) score, ethnicity, marital status and Military Occupational Specialty (MOS).

The findings reveal that those officers commissioned through the MECEP program were 55 percent more likely to stay in until their tenth year of service than officer commissioned via the United States Naval Academy. It was also found that there were no significant differences between commissioning programs in explaining retention-to-retirement behavior. Based on the results of the analysis, it is recommended that increasing the number of MECEP candidates may reduce officer attrition and increase the Marine Corps' return on investment in its commissioning programs.

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THE EFFECTS OF MARINE CORPS ENLISTED COMMISSIONING PROGRAMS ON OFFICER RETENTION.

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I. INTRODUCTION

A. BACKGROUND

The United States Marine Corps continues to search for the most efficient and effective officer accession source mix from which to draw its young officers. The desire is to select the most qualified candidates who will successfully complete their academic requirements, be effective fleet Marine Corps officers as well as have a high propensity to remain on active duty.

There are seven accession programs from which the Marine Corps receives its newly commissioned Second Lieutenants: 1) the United States Naval Academy, 2) the Naval Reserve Officer Training Corps, 3) the Platoon Leaders Course, 4) the Officer Candidate Course, 5) the Marine Enlisted Commissioning Education Program, 6) the Enlisted Commissioning Program, and 7) the Meritorious Commissioning Program. The latter three programs draw solely from the enlisted ranks of the Marine Corps. The primary purpose of these sources is to provide enlisted Marines, who have shown exceptional leadership ability, the opportunity to become commissioned officers (MCO 1560.5L 1994).

Much of the prior research in this area has focused predominantly on the three primary commissioning programs, the Naval Academy, the Naval ROTC program, and the Officer Candidate Course. The focus of this study will be the enlisted commissioning programs and their impact on the retention behavior of officers who enter the Marine Corps via these routes.

B. PURPOSE AND RESEARCH QUESTION

The purpose of this thesis is to develop a model that will measure the effects of various factors that influence the retention of Marine Corps officers, including the commissioning program. Based on the results of the statistical analysis, this thesis will propose accession policy changes that may reduce officer attrition and increase the Marine Corps' return on investment in its commissioning programs. It is important for the Marine Corps to have an accurate assessment of officer retention behavior from all

commissioning programs. This will assist in determining which programs provide the best results based on officer retention propensity by commissioning program. Those programs that are determined to produce officers with higher retention probabilities, in comparison to all other programs, should receive increased accession policy emphasis, which may include increasing the number of officer candidates that are accessed through the respective commissioning program.

For this study, retention will be defined in two different ways: (1) as the individual officer's voluntary decision to remain in an active duty status until the 10th year of commissioned service; and (2) continuing on active duty until retirement eligibility. Also, for the purpose of this study, "prior-enlisted service" will be defined as the officer being commissioned through one of the three Marine Corps enlisted commissioning programs.

The research focuses on answering the following research questions:

- Do officers accessed through enlisted commissioning programs have a higher propensity to remain in service until retirement than those who are commissioned via other programs?
- Do the enlisted commissioning accession sources provide commissioned officers who possess a higher propensity to remain in service until their 10th year of commissioned service in comparison to other accession programs?

C. SCOPE AND LIMITATIONS

This research will evaluate the relationship between the Marine Corps enlisted commissioning programs and officer longevity by analyzing four Marine Corps officer cohorts and their propensity to remain in service. The two milestones for officer retention behavior in this study will be remaining in service until the 10th year of commissioned service and remaining until eligible for retirement. The TBS (The Basic School) fiscal year 1980 officer cohort was used to analyze officer propensity to remain in service until retirement. The TBS cohorts for fiscal years 1981, 1985 and 1989 were used to analyze officer propensity to remain until the 10th year of commissioned service.

The Marine Corps Commissioned Officer Accession Career (MCCOAC) data file consists of 20 years of Marine Corps officer accessions beginning with the fiscal year

1980 TBS (The Basic School) class. Each officer's record begins at TBS and then is sent to Headquarters Master File (HMF) where it follows the officer throughout his or her career. The officer cohorts are organized by TBS fiscal year group; that is, the date the officer attended The Basic School determines the cohort to which the officer was assigned. The data file does not contain records for officers who did not attend TBS and who were commissioned later in their Marine Corps career (Hiatt & Quester, 2001). This study also focuses solely on male Marine officers who attended TBS during the TBS fiscal year cohorts previously mentioned.

The MCCOAC data file is highly reliable in identifying the accession source that officers were commissioned through; however, it provides no information concerning prior-enlisted experience except for those commissioned through the Enlisted Commissioning Programs. Thus, the definition of "prior-enlisted service" is narrow in scope.

D. ORGANIZATION OF STUDY

This study is organized into six chapters. Chapter II briefly describes each of the Marine Corps' regular, reserve and enlisted-to-officer accession programs, including the current program requirements and policies that affect the accession program. The chapter also briefly reviews the histories of the Naval Academy and the Naval ROTC program. Chapter III reviews similar officer retention studies and their methodologies, which provide background for the statistical analysis. Chapter IV describes the content of the Marine Corps Commissioned Officer Accession Career (MCCOAC) data file and a detailed review of the research methodology used to conduct the present analysis. Chapter V presents the empirical results from binary sequential logit analyses. Chapter VI summarizes this study's conclusion, provides accession policy recommendations based on this research, and recommends future research topics based on this study's findings.

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II. OVERVIEW OF MARINE CORPS COMMISSIONING SOURCES

A. OVERVIEW

This chapter describes each of the Marine Corps' regular, reserve and enlisted-to-officer accession programs, including the current program requirements and policies that affect each accession program. Further, brief histories of the United States Naval Academy and the Naval Reserve Officer Training Corps are included. Historical accounts of the Marine Corps enlisted commissioning programs are lacking[1]. Those programs include the Marine Enlisted Commissioning Education Program (MECEP), Enlisted Commissioning Program (ECP), and the Meritorious Commissioning Program (MCP). All newly commissioned Marine Corps officers are required to attend and satisfactorily complete a 26-week Basic Officers Course (BOC) located at The Basic School (TBS) in Quantico, Virginia (MCO 1100.73B, 1989).

Officers who were commissioned prior to 1 October 1997 through the Naval Academy, NROTC, or MECEP accession sources received regular active duty commissions. Sources that led to reserve commissions were the Platoon Leaders Course (PLC), ECP and MCP. Officers who entered with reserve commissions were required to compete for augmentation to a regular commission.

After 1 October 1997, all new officers received reserve commissions and must augment to a regular commission, regardless of commissioning source. Augmentation to Regular status requires completion of one year of active service as a commissioned officer in a Reserve component. Therefore, as of 1 October 1997, all commissioned officers who desire to remain on active duty must apply for a Regular commission to the Marine Corps augmentation board. Augmentation is the process used to manage the Regular officer population and retain the best-qualified Reserve officers on active duty in each occupational category. Once selected for a regular commission, the United States Senate confirms the officers' augmentation.

[1] Mrs. Barbara Shapiro, the current Head of Enlisted to Officer (EO) Programs at Marine Corps Headquarters has worked in the officer programs department since 1975 and has been unable to locate any historical documents that provide the inception date or original purpose for any of the Enlisted Commissioning Programs.

B. UNITED STATES NAVAL ACADEMY (USNA)

In 1825, President John Quincy Adams urged Congress to establish a Naval Academy for the "formation of scientific and accomplished officers." The Naval Academy was founded 20 years later, on October 10, 1845, to provide the nation with a corps of naval officers to prosecute the nation's naval strategy. The Naval Academy's mission is:

> "To develop midshipmen morally, mentally and physically and to imbue them with the highest ideals of duty, honor and loyalty in order to provide graduates who are dedicated to a career of naval service and have potential for future development in mind and character to assume the highest responsibilities of command, citizenship and government." (USNA, 2002)

Acceptance into the Naval Academy is based on several criteria. The basic requirements for an applicant to the Naval Academy are that he or she:

- Be a United States citizen.
- Be of good moral character.
- Be at least 17 years of age and not older than 23 years of age on 1 July of the year they would enter the Naval Academy.
- Be unmarried.
- Not be pregnant.
- Have no dependents.

Before being accepted into the Academy, potential candidates also are required to receive an official nomination from among one of five categories:

1) Nomination from a member of the United States Congress (Senator or Representative).
2) Presidential nomination.
3) Nomination from the Secretary of the Navy.
4) The Sons/Daughters of Medal of Honor Recipients.
5) Naval ROTC / Naval Junior ROTC nomination.

The Naval Academy Admissions Board uses a whole person evaluation system. The "Whole Person Multiple" (WPM) uses a set of predictors and adjustment values that are combined and weighted to produce a numerical score. This derived WPM is then used to determine each applicant's eligibility and potential for success at the United States Naval Academy. The nine "Whole Person Multiple" predictors are: high school class rank, highest Scholastic Assessment Test (SAT) math score, highest SAT verbal score, recommendations from school math and English teachers, athletic extra curricular activities, non-athletic extra curricular activates, Strong Interest Inventory Engineering Science score, and the Strong Interest Inventory Career Retention score.

The four adjustment factors (extra admission points) are: strong recommendation letters from high school English and math teachers, recommendation letters from athletic coaches, strong recommendations from the Naval Academy staff members and faculty, and recommendations from the Naval Academy Admissions Board. These four qualitative measures are then assigned points that are combined with the nine predictors to derive the "Whole Person Multiple." Thus, "Whole Person Multiple" = (Nine Predictors + Four "adjustment factors") (Black, 2001).

The Marine Corps currently selects up to 16 2/3 percent of the graduating class from the Naval Academy. Those midshipmen that are selected are commissioned as Second Lieutenants in the Marine Corps Reserve upon graduation. The Marine Corps officer accession percentage was established in a 1964 Memorandum of Agreement (MOA) between the Navy and the Marine Corps. This percentage was not arbitrarily chosen, it was based on the 1964 Marine officer end-strength percentage within the Naval service.

The current Marine Corps officer accession percentage still remains at 16 2/3 percent, each, of Naval Academy and Naval ROTC graduates (MCO 1100.73B, 1989). Fiscal Year (FY) 2002, the Marine Corps Selected 164 Naval Academy Midshipmen to be commissioned as Marine Second Lieutenants following their graduation. This quantity is exactly 16 2/3 percent of the 2002 Naval Academy graduating class. Approximately 60 midshipmen, who selected Marine Corps as their first choice, were

turned away because of the current MOA percentage limitation. When the MOA was written, there was an agreement to revisit the issue tri-annually.

In a 1998 memorandum to the Chief of Naval Personnel (CNO), (Howell, 1998) the Marine Corps Deputy Chief of Staff for Manpower and Reserve Affairs recommended that the Marine Corps accession mix be adjusted to reflect current Naval officer end-strengths, which would allow up to approximately 24 percent each of the Naval Academy and NROTC graduates to be eligible for commissions in the Marine Corps, however this proposal was not accepted at that time. This topic continues to be debated between Marine Corps Headquarters and the CNO.

Figure 1 shows the officer candidates progression through the USNA commissioning program. Starting with the applicants' initial acceptance into the Naval Academy, through the formal four-year college education process which culminates with the applicant's graduation from the Naval Academy and their subsequent commission as Second Lieutenant of Marines. The newly commissioned Marine officer will then attend The Basic School (TBS), his or her Military Occupational Specialty (MOS) and finally assignment to a Fleet Marine Force (FMF) operating unit.

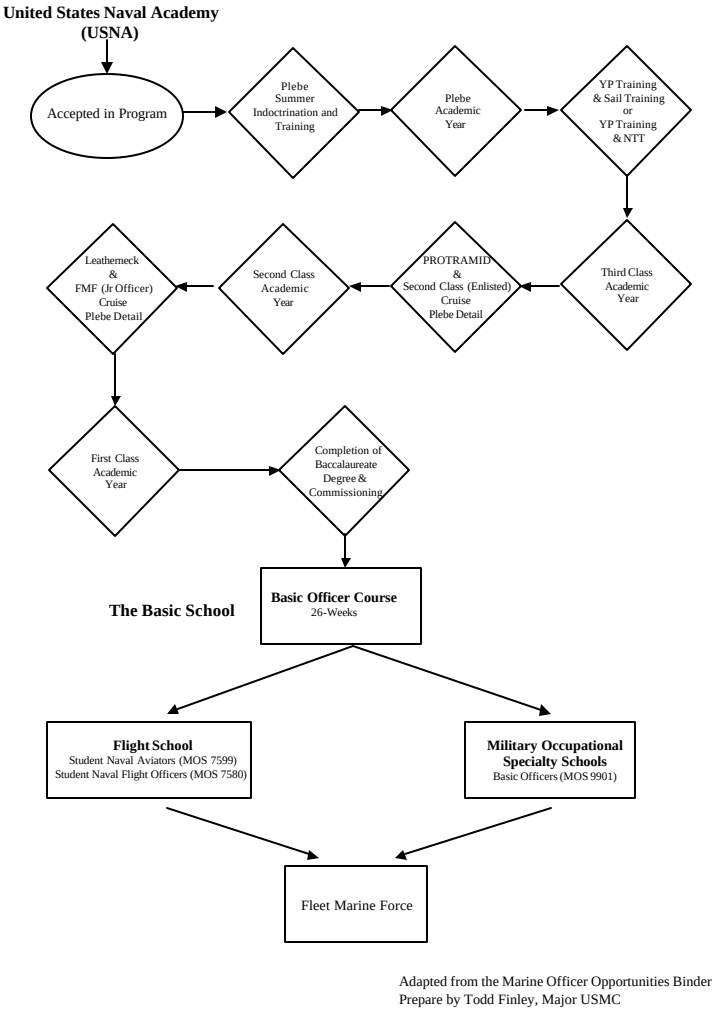


Figure 1. USNA Accession Source Flow

C. NAVAL RESERVE OFFICER TRAINING CORPS (NROTC)

The Naval Reserve Officers Training Corps (NROTC) Program was established in 1926 to provide a broad base of citizens knowledgeable in the arts and sciences of Naval Warfare. The program provided an opportunity for young men to undertake careers in the Naval profession. The Marine Corps entered the NROTC Program in 1932, offering qualified NROTC graduates commissions in the United States Marine Corps.

> "The mission of the NROTC Program today is to develop young men and women morally, mentally, and physically, and to instill in them the highest ideals of honor, courage, and commitment. The program educates and trains young men and women for leadership and management positions in an increasingly technical Navy and Marine Corps." (MCRC, 2002)

Midshipmen selected to attend an NROTC unit are awarded scholarships and receive full tuition and other financial benefits to offset their academic expenses. There are currently 69 NROTC units located throughout the United States to which applicants can apply (MCRC, 2002).

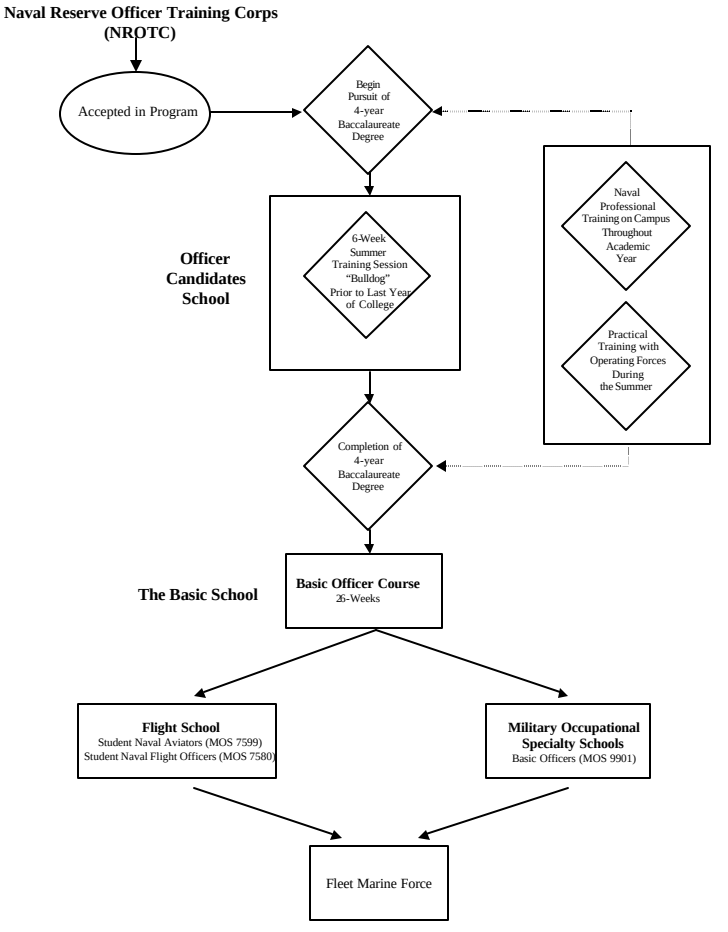
The Marine Option is a subset of the NROTC Program and applicants are chosen from within the NROTC program. The purpose of the Marine Option NROTC program is to educate and train highly qualified young men and women for careers as commissioned officers in the United States Marine Corps. During the junior or senior year of college, the Midshipmen submit a letter to the Chief of Naval Education and Training (CNET) expressing his or her desire for choice of service, Navy or Marine Corps. Shortly thereafter, the midshipmen are given their service assignments. The number of Marine Option Scholarships is based on the needs of the Marine Corps and the Memorandum of Agreement between the Chief of Naval Operations (CNO) and Marine Corps Manpower, which has established a maximum percentage of Marine Options per graduating class--currently 16 2/3 percent (MCO 1100.73B, 1989). Fiscal year 2001, 186 officer candidates were commissioned through the NROTC program (Cash, 2002). The fiscal year goal for Naval ROTC commissions in the Navy is 1050, while the goal for the Marine Corps is 225 Second Lieutenants (MCRC, 2002).

The basic requirements for an applicant to the NROTC program are that he or she must:

- Be a United States citizen
- Be 17 years of age by September 1 of the year starting college and less than 23 on June 30 of that year. (Prior active duty military may be eligible for a waiver.)
- Be a high school graduate or possess equivalency certificates by August 1 of the same year they anticipate entering into the NROTC Scholarship Program.
- Be physically qualified by Navy or Marine Corps standards.
- Have no moral obligations or personal convictions that will prevent conscientious bearing of arms to support and defend the Constitution of the United States.
- Have no record of military or civilian offenses.
- Apply for and gain admission to a college that sponsors an NROTC unit.
- Achieve qualifying scores on the Scholastic Assessment Test (SAT) composite of 1000, or the American College Test (ACT) composite of 45.

Upon graduation and successful completion of required courses and training, a Midshipman is appointed a Second Lieutenant in the United States Marine Corps Reserve and then sent to The Basic School (TBS) in Quantico, Virginia.

Figure 2 shows the officer candidates' progression through the Naval ROTC commissioning program, starting with the applicants' initial acceptance into the program, through the formal 4 year college education process which culminates with the applicant's graduation from the their accredited college or university and their subsequent commission as Second Lieutenant of Marines. The newly commissioned Marine officer will then attend The Basic School (TBS), his or her Military Occupational Specialty (MOS) and finally be assigned to a Fleet Marine Force (FMF) operating unit.



Adapted from the Marine Officer Opportunities Binder
Prepared by Todd Finley, Major USMC

Figure 2. NROTC Accession Source Flow

D. PLATOON LEADERS COURSE (PLC)

The PLC program is an officer program open to all college students attending accredited colleges or universities who, upon successful completion of all requirements, are commissioned Second Lieutenants in the Marine Corps Reserve. The PLC program is divided into three component programs: PLC Ground, PLC Aviation and PLC Law. To be eligible for enrollment in either the PLC Ground, PLC Aviation or PLC Law an applicant must:

- Be a United States citizen.
- Be of unquestionable moral integrity.
- Not have been convicted by civil authorities.
- Be eligible for enlistment into the Marine Corps Reserve.
- Be a regularly enrolled, full-time student at a regionally accredited college or university.
- Have completed one academic term with a normal schedule of courses with a GPA of at least a C (2.0 on a 4.0 scale) and last term GPA of at least a C.
- (For PLC Law) Already be accepted to or is a first or second year law student enrolled in an accredited, law degree granting institution.
- (For PLC Aviation) Pass an extensive flight physical in addition to the standard enlistment physical.

Members of the PLC Program enrolled as college freshmen or sophomores attend two 6-week summer Officer Candidate School (OCS) training sessions. PLC Law program members and members who enrolled during or after their junior year of college will attend a single 10-week OCS training session. The Officer Candidate School is located in Quantico, Virginia (MCO 1100.73B, 1989). Fiscal year 2000, 385 officer candidates were commissioned through the PLC program and 318 in fiscal year 2001 (Nordberg, 2002).

E. OFFICER CANDIDATE COURSE (OCC)

The OCC Program is open to all college seniors and graduates of accredited colleges, universities, or law schools. After being accepted into the program, the OCC officer candidate will attend one 10-week training session at the Officer Candidate

School (OCS) in Quantico, Virginia. Upon graduation from OCS, the officer candidate is commissioned a Second Lieutenant in the United States Marine Corps Reserve and assigned to active duty at the Basic School (TBS) in Quantico, Virginia. The OCC program is divided into three component programs just as the PLC program: Marine Corps Ground, Aviation (AOC), and Law (MCO 1100.73B, 1989). In fiscal year 2000, 462 officer candidates were commissioned through the OCC program and 488 were so commissioned in fiscal year 2001 (Nordberg, 2002).

To be eligible for enrollment in the OCC Program applicants must:

- Be a United States citizen.
- Be of unquestionable moral integrity.
- Not have been convicted by civil authorities.
- Be an enrolled, full-time junior or senior in good standing, or be a graduate of a regionally accredited college or university.
- Have completed one academic term of a normal schedule of courses with a GPA of at least a C (2.0 on a 4.0 scale) and a cumulative GPA and last term GPA of at least a C.

Figure 3 shows the officer candidates progression through the PLC and the OCC commissioning programs, starting with the applicants' initial acceptance into the program, through the remaining college education process which culminates with the applicant's graduation from the their accredited college or university and their subsequent commission as Second Lieutenant of Marines. The newly commissioned Marine officer will then attend The Basic School (TBS), his or her Military Occupational Specialty (MOS) and finally be assigned to a Fleet Marine Force (FMF) operating unit.

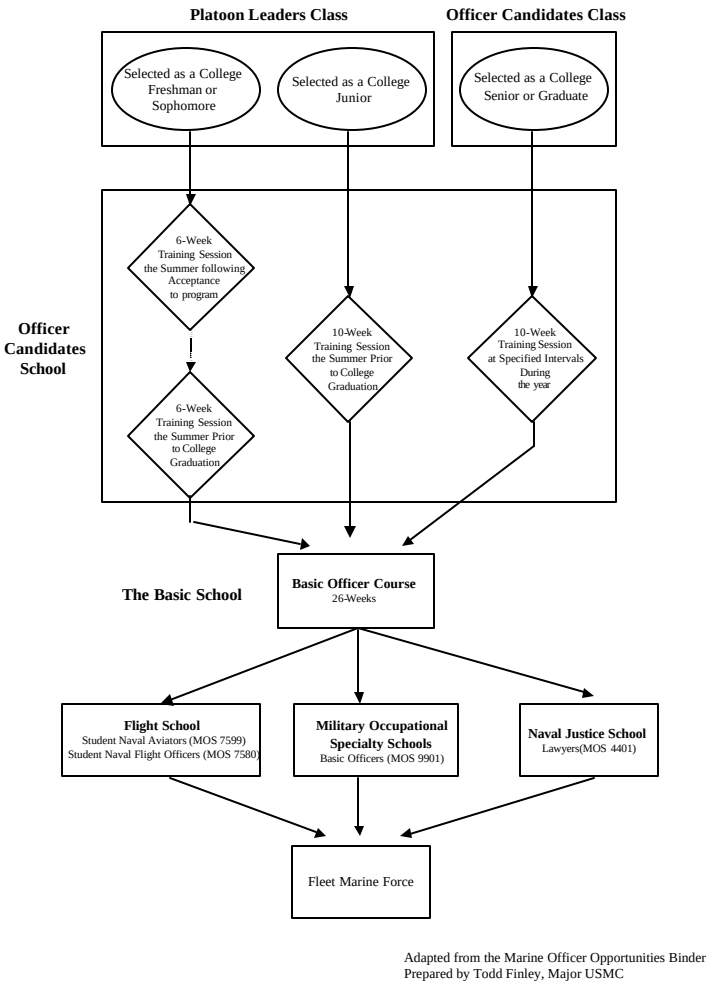


Figure 3. PLC and OCC Accession Source Flow

F. MARINE CORPS ENLISTED COMMISSIONING EDUCATION PROGRAM (MECEP)

The Marine Enlisted Commissioning Education Program (MECEP) is designed to provide outstanding enlisted Marines the opportunity to become Marine Corps officers. MECEP is open to all Active Duty and Active Reserve (AR) Marines who meet the eligibility requirements. The MECEP program allows a Marine to attend college as a full time student while receiving full pay and allowances. The college that the Marine chooses to attend must have an NROTC unit on campus. While attending college, the Marine is attached to the NROTC unit and is responsible to the Professor of Naval Science/Commanding Officer. The Marine is required to attend a 6-week session of officer candidate training ("Bulldog") at OCS the summer following the first academic

year. If the officer candidate completes the program satisfactorily, he or she returns to the NROTC unit and completes his or her undergraduate studies (MCO 1560.15L, 1994).

Marines who successfully complete the program and receive a Baccalaureate Degree are commissioned a Second Lieutenant in the Marine Corps Reserve. Fiscal year 2001, 127 enlisted Marines were selected to participate in the MECEP program (MarAdmin 630/00, 2000) and 112 enlisted Marines for fiscal year 2002 (MarAdmin 511/01, 2001).

The basic eligibility requirements for a MECEP applicant are that he or she must:

- Hold the grade of Corporal (E-4) or above.
- Be at least 20 years of age but less than 26. (The intent is to commission the applicant by age 30.)
- Have ranked in the Top 50% of high school class or General Educational Development (GED) test score of 75 and SAT score of 1000 (400 Verbal) or ACT of 45 or Electrical Composite (EL) score from the Armed Forces Classification Test (AFCT)[2] of 115.
- Agree to reenlist or extend to have 6 years of obligated service in the Regular Marine Corps upon assignment to college.
- Be personally interviewed by their Commanding Officer to determine and evaluate the applicant's potential for successful completion of college and subsequent commissioning as a Marine officer.

Figure 4 shows the officer candidates progression through the MECEP commissioning program, starting with the applicants' initial acceptance into the commissioning program, through the formal college education process which culminates with the applicant's graduation from the their accredited college or university and their subsequent commission as Second Lieutenant of Marines. The newly commissioned Marine officer will then attend The Basic School (TBS), his or her Military Occupational Specialty (MOS) and finally be assigned to a Fleet Marine Force (FMF) operating unit.

[2] The Armed Forces Classification Test (AFCT) is an in-service, multi-part test that is used by the military to identify individual aptitudes and areas of greatest career potential. The AFCT is a variation of the Armed Services Vocational Aptitude Battery (ASVAB) that is taken prior to coming on active duty. The AFCT is divided into sub-tests, including: science, arithmetic reasoning, word knowledge, and paragraph comprehension. It is a test that can be taken to raise area aptitude scores, some of which are the Electrical Composite (EL) score and the General Technical (GT) score.

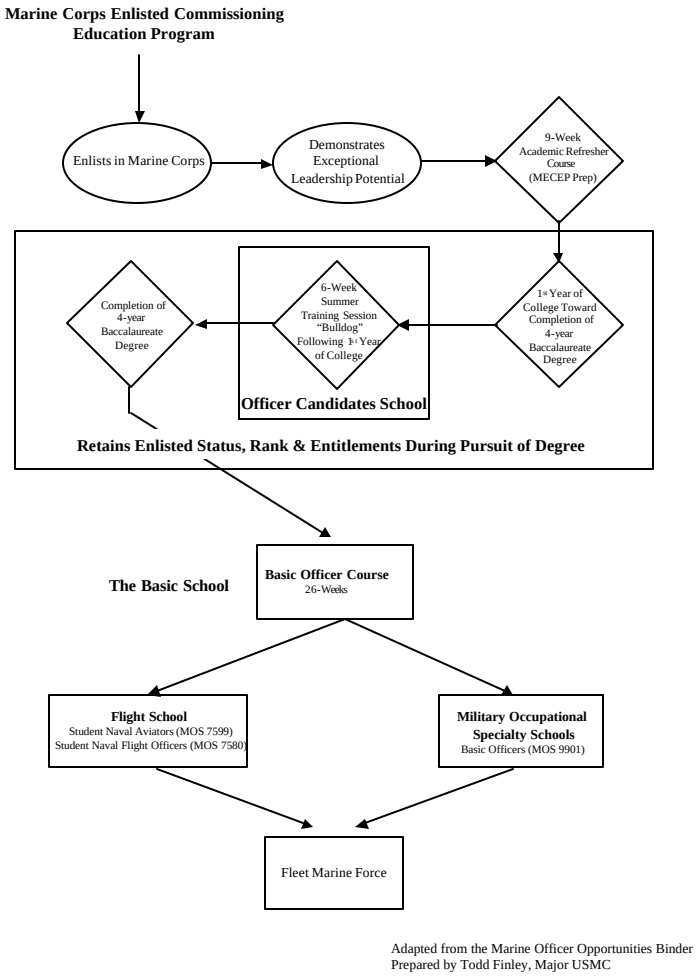


Figure 4. MECEP Accession Source Flow

G. ENLISTED COMMISSIONING PROGRAM (ECP)

The Enlisted Commissioning Program (ECP) allows qualified enlisted Marines in the Regular and Active Reserve (AR) to apply for assignment to the Officer Candidate School (OCS) and a subsequent commission in the Marine Corps Reserve. The Enlisted Commissioning Program is an officer training opportunity for those enlisted Marines who currently possess a four-year degree. Marines selected for ECP are required to successfully complete OCS prior to appointment to commissioned grade. After successful completion of all requirements, he or she is assigned to active duty and reports to The Basic School (TBS) for the 26-week, basic officer course (MCO 1040.43A, 2000). Fiscal year 2001, Marine Corps Headquarters selected 56 enlisted Marines to participate

in the ECP program (MarAdmin 194/01, 2001, MarAdmin 380/01, 2001) and 31 for fiscal year 2002 (MarAdmin 008/02, 2002, Shapiro 2002).

The ECP candidates must:

- Be active duty Marines who possess a 4-year baccalaureate degree.
- Be United States Citizens.
- Be of Marine officer caliber.
- Be of good moral character and integrity.
- Not previously failed any officer programs.
- Possess a minimum combined Math and Verbal SAT score of 1000, or ACT combined Math and English score of 45, or an Armed Forces Classification Test (AFCT) minimum converted score of 115 on the Electrical Composite (EL).
- Be at least 21 years old but not older than 30 years of age on date of appointment to commissioned grade.

H. MERITORIOUS COMMISSIONING PROGRAM (MCP)

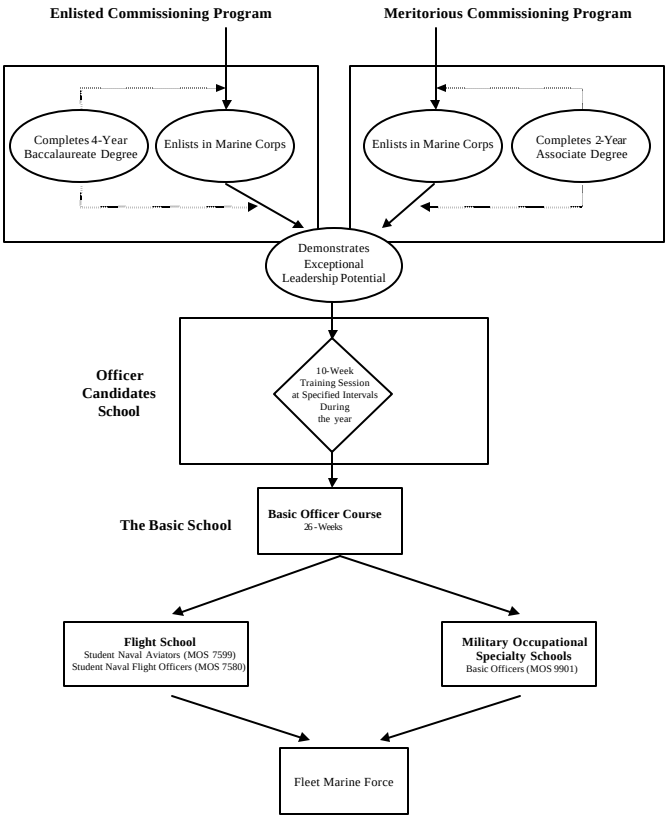
The MCP allows commanding officers to nominate highly qualified enlisted Marines in the Regular Marine Corps and the Active Reserve for assignment to OCS and subsequent commissioning in the Marine Corps Reserve. A prospective MCP candidate has demonstrated exceptional leadership potential and, upon commissioning, is expected to continue the pursuit of a baccalaureate degree to be competitive for augmentation and promotion (MCO 1040.43A, 2000). Fiscal year 2001, Marine Corps Headquarters selected 26 enlisted Marines to participate in the MCP program (MarAdmin 193/01, 2001, MarAdmin 381/01, 2001) and 21 enlisted Marines for fiscal year 2002 (MarAdmin 007/02, 2002; Shapiro, 2002).

For selection into the MCP program, the applicant must:

- Be a United States citizen.
- Be of unquestionable moral integrity and have no court martial record.
- Not have previously failed to complete any military officer program.
- Have attained a passing score on the most recent physical fitness test (PFT).
- Possess a minimum combined Math and Verbal SAT score of 1000, or ACT combined Math and English score of 45, or an Armed Forces Classification Test (AFCT) minimum converted score of 115 on the Electrical Composite (EL).

- Be at least 21 years of age and less than 30 years of age on date of appointment to commissioned grade.
- Possess a high school diploma (or a GED certificate).
- Have satisfactorily earned an associate level degree or 75 semester hours or more of college work at a regionally accredited college or university.

Figure 5 shows the officer candidates progression through the ECP and MCP commissioning programs. Only those applicants' who have demonstrated exceptional leadership potential and have completed a two-year or four-year college degree, depending on the program the applicant is applying for. Once selected the officer candidate is assigned to Officer Candidate School to complete a 10-week training program. After successful completion of OCS, the officer candidate is commissioned a Second Lieutenant of Marines and assigned to The Basic School (TBS), his or her Military Occupational Specialty (MOS) and finally be assigned to a Fleet Marine Force (FMF) unit.



Adapted from the Marine Officer Opportunities Binder
Prepared by Todd Finley, Major USMC

Figure 5. ECP and MCP Accession Source Flow

I. CONCLUSION

There are seven commissioning programs from which the Marine Corps draws its Second Lieutenants. Three of these programs are specifically tailored to draw officer candidates from the Marine enlisted ranks. The aggregate enlisted-to-officer programs commissioned slightly more Marine officers in fiscal year 2001 then did the U.S. Naval Academy. Table 1 shows that 15.5 percent of the officers commissioned in fiscal year 2001 were accessed through one of the enlisted commissioning programs.

The Marine officers commissioned through the enlisted commissioning programs have already been indoctrinated into the Marine Corps culture, have experienced the Fleet Marine Force (FMF) in one form or another and have all made the choice to remain in service beyond their initial service obligation. These three unique features of the enlisted-to-officer programs positively affect the officers' probability of remaining in service until the 10th year of commissioned service and until retirement eligibility.

Table 1. Fiscal Year 2001 Marine Officer Accessions by Commissioning Program.

COMMISSIONING PROGRAM	**FY 2001 NUMBER**	**PERCENT OF TOTAL**
USNA	151	11.17
NROTC	186	13.76
PLC	318	23.53
OCC	488	36.09
MECEP	127	9.39
ECP	56	4.14
MCP	26	1.92
TOTAL	1352	100
MECEP, ECP, & MCP COMBINED	209	15.46

Source: Marine Corps Recruiting Command

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III. LITERATURE REVIEW

A. OVERVIEW

Previous research in the area of Marine officer retention behavior based on enlisted commissioning accession programs has been extremely limited. Specifically, little is known about the retention behavior of officers commissioned through the Marine Enlisted Commissioning Education Program (MECEP), Meritorious Commissioning Program (MCP), and the Enlisted Commissioning Program (ECP). The relevant studies have focused predominantly on the three primary naval officer accession programs, the United States Naval Academy (USNA), the Naval Reserve Officer Training Corps (NROTC) and the Officer Candidate School (OCS). Although the specific focus of this thesis diverges from previous research, the methodologies used in prior retention studies provided a logical launch point and solid foundation for the methodology employed in the present study.

B. RETENTION

Retention beyond the initial service obligation has been used as a tool to measure the effectiveness of military officer accession programs in several prior studies (GAO 1992; Goldhaber, et al, 1995; Smith, 1990; Zinner 1997). The longer an officer remains on active duty, the greater the return on investment in the individual's training and education. The following section will discuss previous studies that found commissioning source to be a statistically significant predictor of officer retention behavior. The propensity to remain in service, based on commissioning source, is generally higher for those officers who graduate from the U.S. Naval Academy and the Naval ROTC program compared to those who receive their commission through the OCS commissioning program. The reviewed studies differed slightly in terms of the definition of retention; however, the results and conclusions were quite similar.

Retention is a complex issue affected by many factors. Continuation behavior based on commissioning sources, specifically, the three primary accession programs, is one such factor that has received considerable attention. The U.S. Naval Academy, Naval ROTC and OCS accession programs have been included in many retention models to predict officer retention behavior and have shown significant effects. The U.S. Naval Academy (USNA) typically has been used as the baseline commissioning program for comparing retention patterns of U.S. Navy and U.S. Marine Corps officers. The literature indicates that, compared to other accession sources, the Academy produces officers who have a greater propensity to remain in service. Propensity defined as a greater average number of years of commissioned service.

In a 1995 Center for Naval Analyses study, commissioning source was significant in predicting retention of Marine Corps officers beyond the initial service obligation (Goldhaber, et al, 1995). Predicted voluntary survival rates beyond the 7th year of commissioned service for Naval Academy, NROTC and ECP officers was near 99 percent, MECEP near 80 percent and PLC and OCC near 70 percent. These survival patterns can be expected based on the shorter initial service obligation incurred by reserve officers. Other significant predictors in this study were occupational type, marital status, General Classification Test (GCT) score, and TBS leadership class rank.

The statistical significance of commissioning source as an officer retention predictor was also confirmed in a similar study conducted to determine the propensity of Naval Surface Warfare Officers to remain in service until their Lieutenant Commander (O-4) promotion board (Duffy, 2000). The baseline logit retention model hypothesis states that commissioning source, ethnicity, undergraduate major, undergraduate GPA, age at commissioning, and dependent status have effects on SWO retention. Using a logit regression, the OCS commissioning program variable showed a marginal yet significant effect on the predictability of Surface Warfare Officer retention; however, the enlisted commissioning variable was not significant. Those commissioned via OCS were .11 less likely than Naval Academy graduates to remain in service until the Lieutenant Commander (O-4) promotion board.

In a similar study, a logit retention model was used to determine those factors that were significantly related to the retention decision of junior Marine officers (Zinner, 1997). Retention was defined as the individual officer's voluntary decision to remain on active duty beyond his initial obligation. Logit regression coefficients are difficult to interpret so partial effects for each of the independent variables were conducted to measure the impact of a one unit change in each of the independent variables makes on the retention probability of the "base case". The "base case" consisted of a single white male OCS graduate in a Ground Support MOS. The total retention probability for this "base case" was .425. This is the sum of all the partial effects of the "base case" independent variables in the model.

In the Zinner study, partial effects of the U.S. Naval Academy and the Naval ROTC commissioning programs were positive and statistically significant. The partial effect of changing the commissioning source from OCS to USNA produced a .301 change in the retention probability for junior Marine officers who graduated from the Naval Academy and a change of .276 for those who graduated from the ROTC. This indicates that the two previous commissioning source variables have a greater impact on the retention probability of the "base case" individual compared to the "base case" commissioning source, OCS, when all other variables are held constant.

Data cited in Smith, 1990, officers from all four services entering active duty between 1979 and 1988 suggested that Naval Academy graduates serve moderately longer in comparison to other sources; USNA officers averaged 13.9 years on active duty while ROTC and OCS graduates averaged 13.0 years and 12.3 years, respectively (Smith, 1990). Analysis of Marine Corps officer retention by source of commission showed that Naval Academy graduates have the highest propensity to remain in service followed by ROTC and OCS graduates. NROTC and OCS graduates were relatively similar in retention propensity (GAO, 1992).

Somewhat dissimilar results were obtained in another study that examined Surface Warfare Naval officers' propensity to remain until the Lieutenant Commander (O-4) promotion board (Nolan, 1993). Nolan found that USNA, NROTC and OCS graduates were statistically quite similar in voluntary continuation rates based on the

aggregate analysis by commissioning program. OCS graduates remained in service at a rate of 48.6 percent, followed by USNA graduates at 45.6 percent, and NROTC graduates with 44.75 percent. The results of the logit regression did change these results, however, once undergraduate education factors were incorporated into the analysis. Some of these large differences appeared in the college selectivity and commissioning program categories. Within the highly selective college category, the Naval Academy had the highest continuation rate of 45.6 percent, followed by NROTC with 31 percent, and OCS at 21 percent (Nolan, 1993). This trend has been trend has generally been echoed throughout the reviewed literature.

C. PERFORMANCE

In this section, studies of the relationship between source of commission and officer performance effectiveness are assessed. The criterion used for measuring effectiveness is whether the officer is promoted with or ahead of one's peers. The literature indicates that for promotions to O-3, prior-enlisted officers are competitive with their peers that have no prior enlisted experience. However, there are some conflicting conclusions on how prior enlisted service affects an officers' probability of being selected for Lieutenant Commander / Major (O-4).

One study ran a logit regression model that showed prior-enlisted Naval officers less likely to get promoted to Lieutenant Commander compared to USNA graduates. The parameter estimates were between -.1810 and -.2389 and were statistically significant with a chi-square less then 1 percent. This would indicate that prior enlisted service was a hindrance for promotion to Lieutenant Commander. This study also showed that prior enlisted officers were less likely, between 5 and 8 percent, to receive a "Recommendation for Accelerated Promotion" (RAP) report from their commanding officer on their fitness report compared to non-prior enlisted officers (Astrella, 1998).

In contrast, another study showed that Marine Officers from enlisted commissioning sources have relatively *higher* promotion-to-Captain (O-3) probabilities and *lower* promotion-to-Lieutenant Colonel probabilities (Goldhaber, et al, 1995). In promotion to Captain, the study found that those commissioned through ECP, PLC and

OCC actually had higher probabilities of promotion relative to the Naval Academy. Prior enlisted officers were not only more competitive with their non-prior enlisted peers in promotion to Captain, but they were equally competitive for promotion to Major. The promotion differences to Major were small and showed that officers commissioned through enlisted commissioning programs fared no more or less likely to get promoted then their non-prior peers. Prior enlisted status only proved to be a disadvantage in being promoted to O-5.

The differences, however, in promotion to Lieutenant Colonel were sizable. In this probit model, MECEP and ECP commissioned officers had the lowest predicted promotion rate to Lieutenant Colonel then the Naval Academy, NROTC, PLC and OCC graduates. MECEP predicted promotion rate was 25 percent and ECP was 35 percent, compared to USNA and NROTC with 66 percent, PLC 58 percent and OCC with 54 percent.

D. CONCLUSION

The literature provides evidence that commissioning source is related to retention and promotion. Among the underlying explanations for the resulting relationships are: selectivity of the particular commissioning program (GAO, 1992); level of military exposure prior to commissioning (Duffy, 2000); and the augmentation hurdle of some commissioning sources (Zinner, 1997). The scant attention and conflicting results with regard to enlisted commissioning programs reinforces the examination of Marine Corps enlisted commissioning programs as a valid endeavor. The literature has consistently stated that the enlisted commissioning programs are statistically significant in predicting officer retention, however, none of these studies focused on the officers' propensity to remain in service until retirement eligibility.

The value of an officers' service should not be qualified by his or her ability to be selected for promotion since previous enlisted length of service may hinder selection to higher rank, nor should the value of officer service be attached to an arbitrary number of years of commissioned service (YCS). The value of the officers' service should be ascertained by his or her propensity to remain in service until the 10th year of

commissioned service and until retirement eligibility. Marines commissioned through the enlisted-to-officer may have anywhere between 2 and 14 years of enlisted experience, and potentially more since age waivers are granted to those with prior enlisted service. These officers enter their initial service obligation with several years of retirement eligible service, which makes them closer to retirement then their peers. To evaluate commissioning programs only by years of commissioned service is unfair to those that have entered their respective commissioning source with years of service already accrued.

IV. DATA AND METHODOLOGY

This chapter discusses the data that were compiled and used to determine the statistical relationship between Marine Corps officer retention and commissioning source -- with a focus on enlisted commissioning programs. Two criterion measures were modeled: (1) remaining in service until the 10th year of commissioned service, and (2) remaining in service until eligible for retirement. This chapter provides a description of the data sources and the officer samples, and defines the variables used in the retention models. The chapter concludes with a review of the methodology used in specifying the research model and the hypothesized affects of the independent variables in the retention model.

A. DATA

1. Marine Corps Commissioned Officer Accession Career (MCCOAC)

The Marine Corps Commissioned Officer Accession Career file was obtained from Marine Corps Headquarters, Personnel Management Division located in Quantico, Virginia. The data file contains 20 years of Marine commissioned officer accessions beginning with the fiscal year 1980 TBS (The Basic School) class. The MCCOAC file is an events-based file that combines information from several data sources as described by Hiatt and Quester (2001).

- The Basic School (TBS): At the conclusion of each fiscal year, The Basic School (TBS) provides current information for the latest fiscal year classes (approximately 6 classes). The TBS data contains all the officers' performance information, the class identification and the first three Military Occupation Specialty (MOS) choices for each officer. The TBS data include military skills grade-average (GPA), military skills class standing, leadership GPA, leadership class standing, academic GPA, academic class standing, overall GPA, overall class standing, and standing in the top, middle or bottom third of the class.

- Marine Corps Total Force System (MCTFS) continuously records, processes, and maintains personnel and pay data for all active duty, reserve and retired Marine personnel. MCFTS is an integrated personnel and pay system that interfaces with over 34 other data systems. MCTFS replaced the Joint Uniform Military Pay System / Manpower Management System (JUMPS/MMS) in 1996. The following are some of the files contained within the MCTFS that are relevant to the MCCOAC data file.
    - Headquarters Master File (HMF):
        - First HMF Record: This record provides most of data for the MCCOAC data file. These data include demographic characteristics, commissioning source, initial military skills scores (PFT, rifle, pistol), education and test score data and key military dates pertinent to the officer's career.
        - Augmentation & Promotion: Once the officer has been selected for a regular commission, this file captures the date of augmentation and snapshots of current unit identifier code, military skills score update, marital status, number of dependents, pay-grade and PMOS (may have changed since first HMF file). The promotion file is updated every time an officer is promoted for each rank from Second Lieutenant (O1) to Lieutenant Colonel (O5) and includes the date of promotion, current unit identifier code, military skills score update, marital status, number of dependents, pay-grade and PMOS.
        - PMOS (Primary Military Occupational Specialty) and full duty attainment: This is the first record where the officer is assigned a 4-digit Primary Military Occupational Specialty code that does not designate the officer as a basic trained officer. This occurs following completion of the officer's first formal military specialty school (i.e., Naval Flight School, Infantry Officer Course, or Communications Officer Course).

        - Last HMF record: This record provides the most current information on the officer; it is either separation information or updated information if the officer is still on active duty. The unique information contained in this file update is the separation designator code that provides a categorical reason for the officer's separation. This update also provides education information, pay-grade, date of rank and the date of the Last HMF update (either the date the office separated or the date all officers still on active duty were updated).
    - Accession Retention Statistic Tracking File (ARSTAT): This file is a permanent longitudinal decision-based personnel file for all Marines; it contains background information, records of all grade changes and a history of all key career decisions for each Marine. This file is a separate file within the Marine Corps Total Force System (MCTFS).
- Additional File Information: Additional information was derived from the following sources: the U.S. Naval Academy, by name assignment (BNA) data, and the Officer Automated Recruit Management System (ARMS) data. The ARMS data include college codes and SAT scores. Unfortunately, not all accession sources appear in the database. The Naval Academy graduates do not appear on the ARMS system so test score data were obtained from the Naval Academy data warehouse. The Center for Naval Analysis (CNA) has by name assignment (BNA) data from 1993 to present that contains records on all who attend officer-training courses. In the MCCOAC data, the BNA was used primarily to verify the accuracy of the TBS data. These additional sources were used to verify the accuracy of other sources that feed into the MCCOAC data file.

Figure 6 shows the various sources of information that feed into the MCCOAC data file. The "other information" source provides information on the officer's commissioning program (i.e. USNA data warehouse for USNA graduates, ARMS for other commissioning programs). The Basic School (TBS) provides some initial data into the MCTFS, primarily TBS performance information for new officers. HMF is a flat file

extract from the MCTFS that is updated either on a quarterly basis or when promotions / augmentation packages are submitted. The Last HMF Record is filled if an officer separates from the service or if an officer is still on active duty at the time MCFTS is updated.

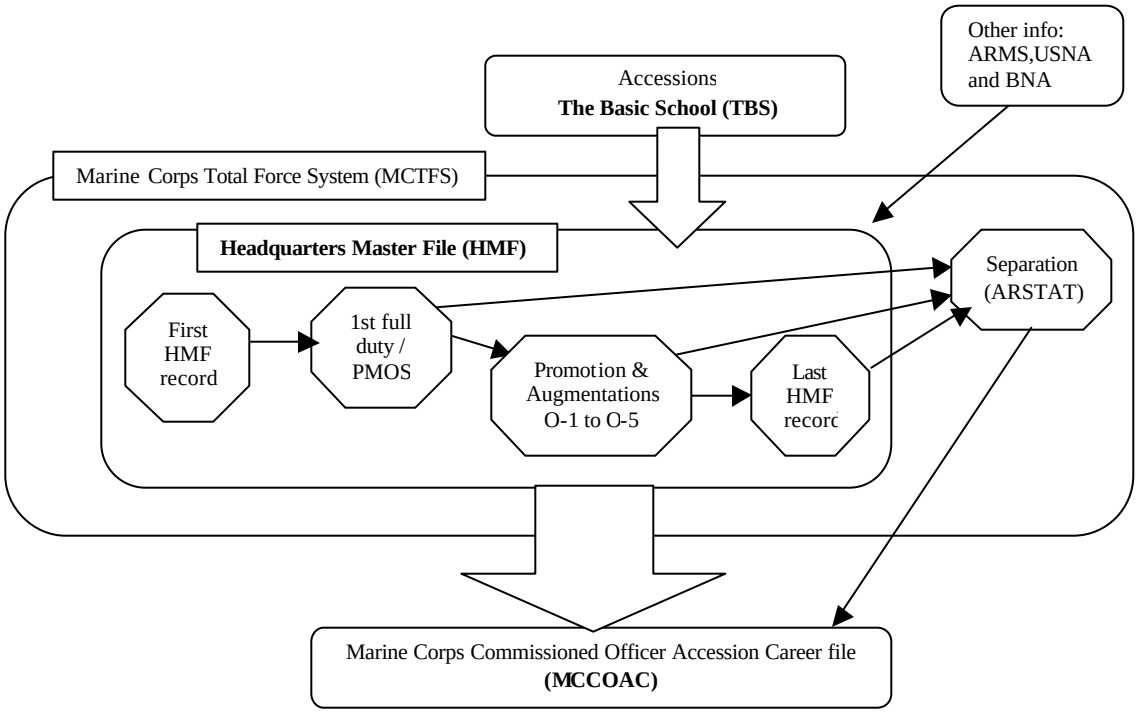

Figure 6. MCCOAC Data Flow[3]

2. Officer Sample

The analysis of retention-to-retirement uses the fiscal year 1980 TBS cohort sample for the logit regression of Marine officer retention-to-retirement. This initial cohort of 1480 Marine officers was filtered to exclude females, cases that lacked commissioning program data, and officers commissioned through MCP. The data set consists of 1260 male, Marine Corps officers that attended TBS during fiscal year 1980, which is 93 percent of the total cases (Table 2). Those cases that were missing commissioning source data were removed because this variable was the key predictor and the focus of the study. Female Marine officers and officers commissioned through MCP were removed because of insufficient sample sizes (3.9 percent and less then 1.0 percent of the total cohort sample, respectively). Of the remaining observations, 6.4 percent of

[3] MCCOAC Flow Chart adapted from the Center for Naval Analyses study "Final Report: Street-to-Fleet Study" page 2, February 2001.

the total were commissioned through MECEP and ECP enlisted commissioning programs.

Table 2. Number and Percentage of Female and Males by Commissioning Program for the 1980 TBS Cohort (% in parentheses).

Commissioning Program	Female	Male	Total (%)
1 PLC	4 (0.9)	444 (99.1)	448 (100)
2 OCC	16 (5.0)	305 (95.0)	321 (100)
3 NROTC	15 (5.6)	255 (94.4)	270 (100)
4 MECEP	1 (4.5)	21 (95.5)	22 (100)
5 ECP	5 (7.2)	65 (92.8)	70 (100)
6 USNA	6 (3.4)	170 (96.6)	176 (100)
7 MCP	0 (0.0)	2 (100)	2 (100)
8 Missing	11 (6.4)	160 (93.6)	171 (100)
Total	58 (3.9)	1422 (96.1)	1480 (100)

Source: MCCOAC Data; percentage reflects percent of each commissioning program that is male or female.

Table 3. Sample from 1980 TBS Cohort.

SAMPLE FOR RETENTION-TO-RETIREMENT ANALYSIS	NUMBER (N)	% of Total Cases
TBS FY 1980 Officer Cohort	1480	100
o Female Officers Removed	58	3.9
o Cases Missing Commissioning Data Removed	160	10.8
o Meritorious Commissioning Program Officers	2	0.0
Analysis Sample	1260	85.1

Source: MCCOAC Data

For the 10-year retention logit analysis, fiscal year 1980, 1983, 1986, and 1989 TBS cohorts comprised the sample (Table 3). This initial sample of 6314 Marine officers was filtered to exclude females, cases that lacked commissioning program data, and officers commissioned through MCP. Female Marine officers and officers commissioned

through MCP were removed because of insufficient sample sizes (3.9 percent and less then 1.0 percent of the total cohort sample, respectively). Of the remaining observations, 6.7 percent of the total were commissioned through MECEP and ECP enlisted commissioning programs. The resulting data set consists of 5712 male Marine Corps officers who attended TBS during fiscal year 1980, 1983, 1986, and 1989. Table 4 shows that the final analysis sample includes 90.5 percent of the original cases.

Table 4. Number and Percentage of Females and Males by Commissioning Program for the 1980, 1983, 1986, and 1989 TBS Cohort (% appears in parentheses).

Commissioning Program	Female	Male	Total (%)
1 PLC	12 (.6)	2104 (99.4)	2116 (100)
2 OCC	126 (7.9)	1479 (92.1)	1605 (100)
3 NROTC	56 (4.7)	1145 (95.3)	1201 (100)
4 MECEP	9 (5.8)	146 (94.2)	155 (100)
5 ECP	5 (2.1)	237 (97.9)	242 (100)
6 USNA	20 (3.2)	601 (96.8)	621 (100)
7 MCP	0 (0.0)	2 (100)	2 (100)
8 Missing	13 (6.8)	179 (93.2)	192 (100)
Total	241 (3.9)	5893 (96.1)	6134 (100)

Source: MCCOAC Data; percentage reflects percent of each commissioning program that is male or female.

Table 5 contains the final officer sample that was used in the 10-year logit regression.

Table 5. Officer Sample for the 10-year Retention Logit Analysis.

SAMPLE FOR 10-YEAR RETENTION ANALYSIS	NUMBER	% of Total Cases
TBS FY 1980 Officer Cohort	1480	100
o Female Officers Removed	58	3.9
o Cases Missing Commissioning Data Removed	160	10.8
o Meritorious Commissioning Program Officers	2	0.0
Analysis Sample	1260	85.1
TBS FY 1983 Officer Cohort	1744	100
o Female Officers Removed	66	3.8
o Cases Missing Commissioning Data Removed	12	0.7
Analysis Sample	1667	95.5
TBS FY 1986 Officer Cohort	1360	100
o Female Officers Removed	40	2.9
o Cases Missing Commissioning Data Removed	6	0.4
Analysis Sample	1314	96.7
TBS FY 1989 Officer Cohort	1550	100
o Female Officers Removed	77	5.0
o Cases Missing Commission Source Data Removed	3	0.2
Analysis Sample	1471	94.8
Total Cohort Population (1980, 1983, 1986, 1989)	6134	100
Sample for Retention Analysis	5712	90.5

Source: MCCOAC Data File

3. Independent Variables

The independent variables were separated into four distinct categories to facilitate their sequential insertion into the retention model. The four categories are demographic, service, The Basic School, and commissioning source information. Table 6 provides a description of the explanatory variables in the model.

Table 6. Independent Variable Descriptions

Variable Description (source)	Variable Name	Variable Type	Coding
Demographic Information			
Marital Status (2)	marital	Nominal (numeric)	0=single 1=married 2=divorced 3=legally separated 4=other 5=missing
Marital: Married (2)	married	Binary	1,0
Marital: Single (2)	single	Binary	1,0
Marital: Divorced / Legally Separated / Other / Missing (2)	mar_oth	Binary	1,0
Ethnicity Group (1)	egroup	Nominal (numeric)	0=other 1=white 2=black 3=hispanic
Ethnicity: White (2)	white	Binary	1,0
Ethnicity: Black (2)	black	Binary	1,0
Ethnicity: Hispanic (2)	hispanic	Binary	1,0
Ethnicity: Other (2)	eth_oth	Binary	1,0
Service Background Information			
General Classification Test Score (1) [GCT]	f_gct	Interval	0-160
GCT score missing (2)	gct_miss	Binary	1,0
Low GCT [<= 125] (2)	l_gct	Binary	1,0
High GCT [> 125] (2)	h_gct	Binary	1,0
Primary Military Occupational Specialty (1)	f_pmos	Nominal (numeric)	MOS numeric assignment
Military Occupation Field (2)*	occfld	Nominal (numeric)	0=missing 1=Combat Arms 2=Combat Support 3=Combat Service Support
Combat Arms (2)	c_mos	Binary	1,0
Combat Support (2)	cs_mos	Binary	1,0
Combat Service Support (2)	css_mos	Binary	1,0

Table 6. Independent Variable Descriptions (cont.)

Variable Description (source)	Variable Name	Variable Type	Coding
TBS Information			
Fiscal Year at TBS (1)	tbs_fy	Interval	1980, 1983,1986,1989
Graduation Thirds (1)	tbs_th	Interval	1=Top Third 2=Middle Third 3=Bottom Third
Graduated in Top Third (2)	tbs_top	Binary	1,0
Graduated in Middle Third (2)	tbs_mid	Binary	1,0
Graduated in Bottom Third (2)	tbs_bot	Binary	1,0
Commissioning Program Information			
Commissioning Program (2)	commprog	Nominal (numeric)	0=Other 1=PLC 2=OCC 3=NROTC 4=MECEP 5=ECP 6=USNA 7=MCP 8=Missing
Platoon Leaders Course Program (2)	plc_prog	Binary	1,0
Officer Candidate Course Program (2)	occ_prog	Binary	1,0
Naval Reserve Officer Training Corps Program (2)	nrotc	Binary	1,0
Marine Enlisted Commissioning Education Program (2)	mecep	Binary	1,0
Enlisted Commissioning Program (2)	ecp	Binary	1,0
US Naval Academy (2)	usna	Binary	1,0

Source: MCCOAC Data

Notes: *** occfld** derived from f_pmos and broken down into three categories based on occupational specialty. The three categories are Combat Arms, Combat Support and Combat Service Support (See Appendix A).

Enlisted to Officer Program is an inclusive group that is made up of all enlisted commissioning program MECEP, ECP and MCP.

(1) Variable drawn directly from the MCCOAC data file.

(2) Variable derived directly from one or more variables within the MCCOAC data file.

4. Dependent Variables

The two dichotomous dependent variables used in these analyses show whether the officer remained in service: 1) until the 10th year of commissioned service, or 2) until eligible for retirement. These variables were derived from the MCCOAC variable num_mon that provides the number of months of commissioned service since commissioning date. Because of this narrowly defined variable, it was necessary to determine retirement eligibility for some of the officers who were commissioned through enlisted commissioning programs by determining the difference between the officer's last HMF record (ls_doa) and the officer's Armed Forces Active Duty Base Date (f_adbd). This difference was then used to accurately determine the number of months of service the officer had served and whether he or she was eligible for retirement.

Table 7. Dependent Variable Description

Variable Description (source)	Variable Name	Variable Type	Coding
10 years of Commissioned Service (2) [≥120 months]	ten_ycs	Binary	1= ≥120 months of service 0= <120 months of service
Eligible for Retirement (2) [≥ 240 months of service]	ret_elig	Binary	1= ≥240 months of service 0= <240 months of service

Source: MCCOAC Data

B. METHODOLOGY

The purpose of this analysis was to determine whether the Marine enlisted commissioning programs are effective in predicting the probability of an officers remaining in service until the 10th year of commissioned service or until eligible for retirement. Because both retention criteria were dichotomous, logistic regression was the most appropriate choice for the modeling strategy. Explanatory variables were entered in the logit model sequentially to determine whether successive variables or a variable

category significantly adds to the explanatory power of the retention model. This section describes the specifics of the 10-year retention and retention-to-retirement models. Also, included in this section are the hypothesized affects of each independent variable on the 10-year retention and retention-to-retirement models.

1. Retention Model Specification

The model specification was based on variables that were found to be statistically significant in predicting officer retention behavior in other studies (Goldhaber, et al, 1995; Nolan, 1993; Zinner, 1997). It is hypothesized that the commissioning program variable (independent focus variable) will have a relatively strong and statistically significant impact on officer retention behavior in the 10-year commissioned service and retention-to-retirement models, while controlling for the other independent variables (TBS graduation ranks, GCT, ethnicity group, marital status, and military occupational field). The models are displayed in Tables 8 and 9.

Table 8. 10-Year Retention and Retention-to-Retirement Model Methodology

Logit Retention Model for Remaining until 10th year of Commissioned Service:
ten_ycs = *f* (Commissioning program, TBS graduation thirds, GCT, Ethnicity Group, Marital Status, Military Occupational Field)
Logit Retention Model for Remaining until Retirement Eligibility:
ret_elig = *f* (Commissioning program, TBS graduation thirds, GCT, Ethnicity Group, Marital Status, Military Occupational Field)

The logit estimation consists of a four-step process (See Table 9). In step 1, demographic information was included in the logit regression. In step 2, service information was added to the model and step 3 adds TBS information to the model. In step 4, all the variable categories were inserted, including the focus variable category, commissioning program.

Table 9. 10-Year Retention and Retention-to-Retirement Model Specifications

Step	Variable Input	Model Specification
Step 1	Demographic Information	(ten_ycs or ret_elig) = f (Ethnicity Group + Marital Status)
Step 2	Service Background Information	(ten_ycs or ret_elig) = f (Ethnicity Group + Marital Status + GCT + Military Occupation Field)
Step 3	TBS Information	(ten_ycs or ret_elig) = f (Ethnicity Group + Marital Status + GCT + Military Occupation Field + TBS graduation thirds)
Step 4	Commissioning Program Information	(ten_ycs or ret_elig) = f (Ethnicity Group + Marital Status + GCT + Military Occupation Field + TBS graduation thirds + Commissioning Program)

2. Hypothesized Effects of the Explanatory Variables

The independent variables for the 10-year retention and retention-to-retirement models were chosen based on previous studies and the hypothesized effect they would have on predicting retention behavior. Those variables that are hypothesized to increase retention propensity for Marine Corps officers are as follows: commissioned through MECEP, ECP or MCP program, white ethnicity, graduated top third of TBS class, and married. Variables that will have a negative impact on retention are as follows: combat arms occupational field, commissioned through PLC or OCC programs, black or Hispanic ethnicity, and graduate in bottom third of TBS class.

The base case to which each of these independent variables are compared to is a white, male Marine Corps officer, graduate of the U.S. Naval Academy, with a combat support occupational field, who graduated in the middle third of his TBS class. Table 10 summarizes some of the independent variables and their hypothesized relationship to actual retention behavior.

Table 10. Hypothesized Effects of Independent variables on 10-Year Retention and Retention-to-Retirement Model.

Variable Name	Expected Sign
Demographic Category	
Marital Status	
Married	+ (compared to Single)
Ethnicity Group	
Black	- (compared to White)
Hispanic	- (compared to White)
Service Information Category	
General Classification Test Score [GCT]	+ (higher GCT higher Retention)
Military Occupation Field	
Combat Arms	- (compared to Combat Support)
Combat Service Support	+ (compared to Combat Support)
TBS Information Category	
Graduated in Top Third	+ (compared to Middle Third)
Graduated in Bottom Third	- (compared to Middle Third)
Commissioning Source Information Category	
Platoon Leaders Course Program	- (compared to USNA)
Officer Candidate Course	- (compared to USNA)
Naval Reserve Officer Training Corps Program	? (compared to USNA)
Marine Enlisted Commissioning Education Program	+ (compared to USNA)
Enlisted Commissioning Program	+ (compared to USNA)

The two models discussed in this chapter were designed to assess the relationship between enlisted commissioning programs and to test the null hypothesis that enlisted commissioning programs have no effect on Marine Corps officer retention behavior. A logistic regression was used to accurately determine the effects of each enlisted commissioning program and their aggregate effect. The results of the 10-year retention and retention-to-retirement models are discussed in the following chapter.

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V. DATA ANALYSIS

A. INTRODUCTION

The purpose of these analyses is to identify those factors that are statistically significant in predicting the retention behavior of Marine Corps officers, with a focus on those officers commissioned through enlisted commissioning programs (MECEP, ECP, MCP). This chapter describes the results of logit regression analyses of the effect of selected independent variables on the retention behavior of Marine Corps officers. Retention was examined from two perspectives: 1) until the 10th year of commissioned service and: 2) until eligible for retirement.

This chapter provides the descriptive statistics for the variables used in the logit regressions, discusses those variables that were determined to be significant and concludes with the results of the 10-year retention and retention-to-retirement logit regressions.

B. DESCRIPTIVE STATISTICS

The following sections contain the variable frequencies for each of the nominal variables that were used in the regression models. Preliminary analyses consisted of cross tabulations of the variables identified for inclusion in this study. The results of the cross tabulation are contained in Appendix B. Overall, these univariate results supported the inclusion of the independent variables selected. That is, for the most part, they were significantly related to and/or showed unique contributions in predicting retention. The descriptive cross tabulations for the 10-year retention and retention-to-retirement regression samples are located Appendix C and Appendix D, respectively. These cross tabulations are provided to give a more in-depth look at the focus variables and their relationships with the other control variables used in the logit regressions.

1. Regression Base Case

Table 11 shows the "base case" explanatory variables that were excluded from the regressions. The explanatory variables "white", "single", and "high GCT score" represent over 50 percent of the regression sample cases, thereby providing a representative "base case" in which to compare the regression results. The "combat support" and "middle third of TBS" variables represent a third or more of these cases. The U.S. Naval Academy has been used as the "base case" commissioning program primarily because of its prestige, and relatively high expense compared to other commissioning programs. The "base case" can be visualized as a single, white male with a high GCT score who graduated from a highly selective commissioning program, received a combat support MOS and whose performance was average while attending TBS.

Table 11. 10-Year Retention logit Model Base Case

Explanatory Variable	**Base Case Variable**
Ethnicity	White
Marital Status	Single
GCT score	High GCT score
Occupational Field	Combat Support
TBS graduation rank	Middle Third of TBS class
Commissioning Program	United States Naval Academy

2. 10 - Year Retention Model

Table 12 provides the frequency and the percentage of the total sample of each independent control variable used in the 10-year retention logit regression.

Table 12. Frequency Distribution of Independent Control Variables (N=5712) for the 10-year Retention Logit Regression (% of total sample in parentheses)

Demographic Information	**Number (%)**
Ethnicity	
Black	287 (5.0)
Hispanic	159 (2.8)
Other	138 (2.4)
White	5128 (89.8)
Marital Status	
Single	3004 (52.6)
Married	2034 (35.6)
Marital Other	674 (11.8)
Service Information	**Number (%)**
General Classification Test Score	
Lower GCT score	2115 (37.0)
Higher GCT score	3129 (55.9)
Missing GCT score	405 (7.1)
Occupational Field	
Combat Arms	1621 (28.4)
Combat Support	2608 (45.7)
Combat Service Support	1053 (18.4)
Missing Data	430 (7.5)
TBS Information	**Number (%)**
TBS Graduation Ranks	
Top Third	1898 (33.2)
Middle Third	1905 (33.4)
Bottom Third	1907 (33.4)

Source: MCCOAC Data

Table 13 provides the frequency and the percentage of the total sample that each commissioning program accounts for in the 10-year retention logit regression sample. Of

note is that the MECEP and ECP programs account for less then 10 percent of the total sample, just slightly less then the Naval Academy.

Table 13. Frequency Distribution of Independent Focus Variables (N=5712) for 10-year Retention Logit Regression (% of total sample in parentheses)

Commissioning Programs	**Number (%)**
Platoon Leaders Course	2104 (36.8)
Officer Candidate Course	1479 (25.9)
Naval Reserve Officer Training Corps	1145 (20.0)
Marine Enlisted Commissioning Education Program	146 (2.6)
Enlisted Commissioning Program	237 (4.2)
U.S. Naval Academy	601 (10.5)

Source: MCCOAC Data

Table 14 provides the frequency of the dichotomous dependent variables that identify those cases within the sample that have remained in until the 10th year of commissioned service or have separated prior to reaching the 10th year.

Table 14. Frequency Distribution of Dependent Variables (N=5712) for 10-year Retention Logit Regression (% of total sample in parentheses)

10-Year Retention	**Number (%)**
Separated prior to 10th year of commissioned service	3029 (53.0)
Retained until 10th year of commissioned service	2683 (47.0)

Source: MCCOAC Data

3. Retention-To-Retirement Model

Table 15 provides the frequency and the percentage of the total sample of each independent control variable used in the retention-to-retirement logit regression.

Table 15. Frequency Distribution of Independent Control Variables (N=1260) for the Retention-to-Retirement Logit Regression (% of total sample in parentheses)

Demographic Information	**Number (%)**
Ethnicity	
Black	42 (3.3)
Hispanic	18 (1.5)
Other	15 (1.2)
White	1185 (94.0)
Marital Status	
Single	316 (25.1)
Married	700 (55.5)
Marital Other	244 (19.4)
Service Information	**Number (%)**
General Classification Test Score	
Lower GCT score	313 (24.9)
Higher GCT score	663 (52.6)
Missing GCT score	284 (22.5)
Occupational Field	
Combat Arms	333 (26.4)
Combat Support	565 (44.9)
Combat Service Support	164 (13.0)
Missing Data	198 (15.7)
TBS Information	**Number (%)**
TBS Graduation Rank	
Top Third	428 (34.0)
Middle Third	420 (33.3)
Bottom Third	410 (32.5)
Missing Data	2 (0.2)

Source: MCCOAC Data

Table 16 provides the frequency and the percentage of the total sample that each commissioning program accounts for in the retention-to-retirement logit regression

sample. Note that the MECEP and ECP programs account for less then 10 percent of the total sample, slightly less then the Naval Academy.

Table 16. Frequency Distribution of Independent Focus Variables (N=1260) for Retention-to-Retirement Logit Regression (% of total sample in parentheses)

Commissioning Program	**Number (%)**
Platoon Leaders Course	444 (35.2)
Officer Candidate Course	305 (24.2)
Naval Reserve Officer Training Corps	255 (20.2)
Marine Enlisted Commissioning Education Program	21 (1.7)
Enlisted Commissioning Program	65 (5.2)
U.S. Naval Academy	170 (13.5)

Source: MCCOAC Data

Table 17 provides the frequency of the dichotomous dependent variables that identify those cases within the sample that have remained in until eligible for retirement or have separated prior to reaching retirement eligibility.

Table 17. Frequency Distribution of Dependent Variables (N=1260) for Retention-to-Retirement Logit Regression (% of total sample in parentheses)

Retention-to-Retirement	**Number (%)**
Separated before eligible for retirement	857 (68.0)
Retirement Eligible	403 (32.0)

Source: MCCOAC Data

C. 10-YEAR RETETION MODEL RESULTS

When running the 10-year retention logit regression, the "base case" variables, as displayed in table 11, were removed from the regression to provide a comparison for the

remaining explanatory variables. Table 18 shows the results of the 10-year regression, highlighting those variables that were statistically significant in predicting Marine officer retention behavior in the model.

The Exp(B) is the predicted change in odds for a unit increase in the predictor. When Exp(B) is less than 1, increasing the values of the variable corresponds to decreasing odds of the event's occurrence, and when an Exp(B) is greater than 1, increasing values of the variable corresponds to a increasing odds of the event's occurrence.

The explanatory variables "married, combat service support, occupational field missing, TBS top third, TBS bottom third" are all statistically significant in the logit regression. "Married" and "TBS top third" are the only two variables that have a positive effect on officer retention behavior in comparison to the "base case". The PLC and OCC programs were statistically significant and negative in their effect on officer retention behavior in comparison to USNA graduates. The MECEP program was also statistically significant in the model with a positive effect on officer retention behavior to remain until the 10th year of commissioned service.

Based on the results of the regression displayed in table 18, those Marine officers that are married are 47.2 percent more likely to stay until the 10^{th} year of commissioned service in comparison with those that are single. In addition, those officers that graduated in the top third of the TBS class are 19 percent more likely to stay until the 10^{th} year of commissioned service in comparison with those officers that graduate in the middle third. Conversely those that graduate in the bottom third are 46.8 percent less likely to stay compared to the middle third graduates.

The most dramatic results of this logit regression are those found for the commissioning programs. PLC and OCC are 47.3 and 57.1 percent less likely to stay in until the 10^{th} year of commissioned service in comparison with a USNA graduate. These results are consistent with previous research. The MECEP program, on the other hand, has a 51 percent positive effect on the likelihood that a Marine officer commissioned through this program will stay in until the 10^{th} year of commissioned service in comparison to those commissioned through the Naval Academy.

Table 18. 10-Year Retention Logit Regression Variable and Model Results

Variable	B	S.E.	Wald	Exp(B)	% Effects
BLACK	-.131	.135	.943	.877	--
HISPANIC	-.201	.178	1.280	.818	--
ETH_OTH	.017	.186	.008	1.017	--
MARRIED	.472**	.062	58.131	1.603	47.2
MAR_OTH	.084	.104	.652	1.087	--
C_MOS	-.046	.066	.481	.955	--
CSS_MOS	-.301**	.077	15.258	.740	-30.1
OCC_MISS	-1.861**	.168	122.173	.156	-186.1
L_GCT	-.009	.063	.021	.991	--
GCT_MISS	-.233	.145	2.581	.792	--
TBS_TOP	.190**	.069	7.631	1.209	19.0
TBS_BOT	-.468**	.070	44.652	.626	-46.8
PLC_PROG	-.473**	.099	22.617	.623	-47.3
OCC_PROG	-.571**	.104	30.145	.565	-57.1
NROTC	-.154	.107	2.072	.857	--
MECEP	1.510**	.273	30.669	4.536	51.0
ECP_PROG	-.010	.166	.003	1.010	--
Constant	.320	.102	9.892	1.377	
df	17				
Chi-Square	620.591**				

** Statistically Significant
-- Not Significant

Table 19 shows the overall explanatory power of the 10-year retention model and provides a performance assessment of the model by cross tabulating the observed response categories with the predicted response categories. The 10-year retention model classification table shows that the model is 61.7 percent predictive of Marine officer 10-year retention behavior based on the explanatory variables used in the regression model.

Table 19. 10-Year Retention Model Classification Table

Observed			Predicted		
			TEN_YCS		Percentage Correct
			0	1	
Step 4	TEN_YCS	0	2029	998	67.0
		1	1187	1494	55.7
	Overall Percentage				61.7

a. The cut off value is .500

D. RETENTION-TO-RETIREMENT MODEL RESULTS

Running the retention-to-retirement logit regression the "base case" variables, as displayed in table 11, were removed from the regression to provide a comparison for the remaining explanatory variables. Table 20 displays the results of the retention-to-retirement regression, highlighting those variables that were statistically significant in predicting Marine officer retention behavior in the model.

The Exp(B) is the predicted change in odds for a unit a unit increase in the predictor. When Exp(B) is less than 1, increasing the values of the variable corresponds to decreasing odds of the event's occurrence, and when an Exp(B) is greater than 1, increasing values of the variable corresponds to a increasing odds of the event's occurrence.

The explanatory variables "combat arms, combat service support, occupational field missing, GCT missing, TBS top third and TBS bottom third" are statistically significant in the logit regression. "Combat arms, combat service support and TBS top third" have a positive effect on predicting officer retention behavior. "Occupational field missing, GCT missing and TBS bottom third" had a negative effect on officer retention behavior.

The results of this regression, as shown in table 20, concur with the previous model, that TBS graduation rank, depending on where the officer falls, increases or decreases the officers likelihood to stay until eligible for retirement compared to those in the middle third. Those graduating in the top third are 44.0 percent more likely to stay until retirement eligible but those in the bottom third are 38.7 percent less likely to stay. Of particular note, is that the commissioning programs were not statistically significant in increasing or decreasing the likelihood that a Marine officer from either of the commissioning programs would stay until eligible for retirement.

Table 20. Retention-to-Retirement Logit Regression Variables and Model Results

Variable	B	S.E.	Wald	Exp(B)	% Effects
BLACK	-.206	.404	.259	.814	--
HISPANIC	-.455	.628	.525	.634	--
ETH_OTH	.693	.705	.968	2.000	--
MARRIED	.245	.150	2.677	1.278	--
MAR_OTH	.355	.369	.925	1.427	--
C_MOS	.695**	.151	21.138	2.004	69.5
CSS_MOS	.573**	.193	8.823	1.774	57.3
OCC_MISS	-3.479**	1.073	10.503	.031	-3.479
L_GCT	.189	.155	1.481	1.208	--
GCT_MISS	-1.066**	.315	11.481	.344	-106.6
TBS_TOP	.440**	.157	7.949	1.552	44.0
TBS_BOT	-.387**	.174	4.949	.679	-38.7
PLC_PROG	-.121	.217	.308	.886	--
OCC_PROG	-.065	.227	.082	.937	--
NROTC	-.239	.238	1.005	.787	--
MECEP	.746	.515	2.096	2.108	--
ECP_PROG	.411	.333	1.525	1.508	--
Constant	-.966	.235	16.945	.381	
df	17				
Model	246.356**				

****** Statistically Significant
-- Not significant

Table 21 shows the overall explanatory power of the 10-year retention model and provides a performance assessment of the model by cross tabulating the observed response categories with the predicted response categories. The retention-to-retirement model classification table shows that the model is 71.7 percent predictive of Marine officer retention-to-retirement behavior based on the explanatory variables used in the regression model.

Table 21. Retention-to-Retirement Model Classification Table

Observed			Predicted		
			RET_ELIG		Percentage Correct
			0	1	
Step 1	RET_ELIG	0	769	88	89.7
		1	269	134	33.3
	Overall Percentage				71.7

a. The cut value is .500

E. CHAPTER SUMMARY

Several significant findings were discovered in the retention model results, with the effects of some explanatory variables concordant with previous hypothesized effects. Those statistically significant variable effects, whether they are positive or negative, have explanatory power in predicting Marine Corps officer retention.

Explanatory variables such as, combat service support, TBS top third and TBS bottom third, were statistically significant in predicting Marine Corps officer retention behavior in both of the logit regressions. Graduating in the top third of TBS has a positive effect whereas graduating in the bottom third of TBS has a negative effect on Marine Corps officers remaining until the 10th year of commissioned service or until eligible for retirement. The explanatory variable combat service support was statistically significant in both logit regressions; however the direction of the effect on retention was completely opposite. Combat service support has a negative effect on officer retention in the 10- year retention regression and a positive effect on officer retention in the retention-to-retirement logit regression.

In the 10-year retention regression, the most interesting effect was the explanatory power of the focus variable, MECEP program, on officer retention behavior. Because the enlisted commissioning programs are the focus of this study, it was reinforcing to see the positive explanatory power of this commissioning program on officer retention behavior. The PLC and OCC commissioning programs were statistically significant in the 10-year retention model, as well; however, the effects were negative on officer retention. This finding concurs with previous studies that focused on the three primary commissioning programs.

The most interesting outcome of the retention-to-retirement regression was the lack of any statistically significant, explanatory power of the focus variables on officer retention-to-retirement. This was contrary to the prediction that commissioning programs, specifically the enlisted commissioning programs, would have positive effects on Marine Corps officer retention-to-retirement behavior.

The conclusions based on the logit regression analyses, the recommendations for Marine Corps officer accession policy changes, and the possibilities for future research in this area will be discussed more in-depth in the following chapter.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

This section will discuss how those variables that were significant in the regression, affect Marine officer ten-year and retirement retention behavior. This section will also discuss some possible reasons for their positive or negative effect on retention behavior.

1. Ten-year Retention

MECEP – This commissioning program was statistically significant and commissioning through this program is associated with a greatly increased likelihood that the officer will remain in service until his tenth year of commissioned service. This compares favorably to the "base case" commissioning program (USNA) that is highly selective, extremely competitive and is known for producing exceptionally qualified naval officers. The highly selective nature of the MECEP program is designed to only draw those potential applicants from the enlisted ranks who have already demonstrated the mental aptitude, physical ability and leadership qualities that are needed to be officers of Marines. This screening process is quite similar to the "whole person" method used by the Naval Academy. However the distinct advantage that the MECEP program has over the Academy is that each candidate for this program is observed in the performance of his or her military duties, to ensure that every candidate is not only capable, but that he or she has already adapted to the military culture and is a professional-oriented candidate.

The dramatic increase in likelihood to stay in until the 10^{th} year of commissioned may be explained by the time frame in which these candidates are drawn from the fleet. MECEP candidates must be a corporal (E-4) or higher to be selected. This will place them anywhere between 2 and 10 years of military service. For example, if the candidate entered the Marine Corps at age 18, was promoted to corporal within two years, was selected and then attended college and received his degree in four years, the Marine would have already been in service 10 years after their initial commissioning obligation expired. This would place them just at the halfway mark for retirement. This case is not

the norm, as most MECEP officers have more time in service at that the end of the obligated service that places them even closer to retirement eligibility. These officers are more inclined to stay until the 10th year of commissioned service because of the requirement to fulfill 10 years of commissioned service to be eligible for officer retirement pay. The retiree would still receive his or her retirement payments regardless of completing 10 years of commissioned service, however payments would not equal the highest rank earned during active service time, 10 years of commissioned service is required before an officer with prior enlisted service can draw officer retirement pay.

PLC and OCC – These two commissioning programs have a negative effect on officer 10-year retention in this model. These findings concur with previous studies that have observed the negative effect these two commissioning programs have had on officer retention behavior in comparison to the service academies and the reserve officer training corps programs. Those officers commissioned through these programs are less likely to stay until the 10th year of commissioned service. One potential reason for this reduced likelihood is the relatively small amount of initial military indoctrination and training that is conducted in comparison to the other commissioning programs. Unlike the Naval Academy, where potential Marine Corps officers are exposed to the military culture, values and training for their entire four years of college, these two programs are exposed to either a 10-week or two, 6-week training programs in the summer prior to their commissioning. This lack of exposure and familiarity to the Marine Corps profession may produce a "culture shock" that prohibits the candidate from assimilating and accommodating to the Marine Corps.

TBS Top Third and TBS Bottom Third – The effects of graduating in each of the TBS thirds was consistent with the hypothesized effects. Those officers who graduate in the top third are more likely to stay until their 10th year of commissioned service, unlike those in the bottom third who are more likely to separate prior to their 10th year, when compared to the middle third graduates. Those officers who have adjusted well to the military life style and the Marine Corps culture, generally do better at The Basic School, hence they receive higher performance and leadership grades that affect their overall standing within their TBS class. Top third officers will graduate with a higher linear number in comparison to their peers who graduate in either of the lower two thirds. This

linear placement will affect the officer throughout his or her career; those high on the linear list will always get promoted sooner then those lower on the linear list. Marine officers' initial performance at TBS will always affect them. It stands to reason that those who have adjusted well to the Marine Corps culture and military service in general, whether the adjustment to was made during previous enlisted service or through effective initial military training at a service academy or ROTC unit, will be more likely to remain in service then those who are slow to or maladjusted to the military culture and profession.

Married – Those officers who are married are more likely to remain in service in comparison to single officers. It is possible that married officers may be more career oriented since they are not only responsible for themselves, but also for a family. The once shortsighted ambitions of a single person may have turned to thoughts of job security and occupational stability. There are also those families that have come to enjoy and thrive within the Marine Corps family and that enjoy the tight-knit community, and life-long friendships that are established. It may even be family members who drive the service member to remain in to maintain their current living conditions and location.

Combat Service Support – The negative explanatory power of this occupational category may be attributed to the skills-oriented specialty training that these officers receive. The preponderance of these MOSs are technical in nature and require extensive preliminary training that is highly marketable in the civilian sector, which may lure them to pursue careers outside of the military. There is also a "non-warrior" stigma attached to MOS's in the Combat Service Support occupation where officers in this category may feel as if they are not part of the Marine Corps warrior profession, far removed from the frontline units that receive all of the glory and media doting. A possible solution to remove this "non-warrior" stigma is to launch an internal campaign focused on occupational-esteem building and combat support role glamorization. Since these specialty skills are expensive to teach and require a large, up-front investment in human capital, further analysis of this phenomenon is needed.

2. Retention-to-Retirement

Commissioning Program – None of the commissioning programs had a significant effect on officer retention-to-retirement behavior. This is contrary to the hypothesis that the enlisted commissioning programs would have some impact on retention behavior. This finding, however, is not without important implications. The logit regression was used to determine the effects of each of the commissioning program on officer retention behavior in comparison with the "base case" commissioning program, USNA. The Naval Academy was chosen since it is considered the most expensive, most formal and most extensive pre-commissioning military training of all of the commissioning programs. Within this retention model, the results of this regression show that there are no statistical differences between the commissioning programs in explaining Marine Corps officer retention-to-retirement behavior.

TBS top third and TBS bottom third – The results of this regression were identical to the 10-year retention model. Those officers in the top third have more readily adapted to the Marine Corps culture and thus performed better than the remaining two thirds of their respective classmates. Assignment to the top third of the TBS class increases the likelihood that the officer will remain in service until eligible for retirement by 55 percent compared to those who graduate in the middle third. Conversely, those officers in the bottom third are 32 percent less likely to remain in until retirement. Because linear assignment for the officer's peer group begins in TBS, his professional reputation, intellectual agility and leadership ability evaluation begin early in the officer's career. If the officer has difficulty adjusting to the rigors of Marine Corps culture, his academic and leadership grades will reflect his or her weaknesses and drive overall performance lower. This may account for their reluctance to stay in until retirement since they will consistently lag a few months behind their peer group in promotions.

Combat Arms and Combat Service Support – Both of these occupational categories were positive predictors of Marine officer retention-to-retirement behavior in comparison to the "base case" – combat support category. This finding is inconsistent with the results of the 10-year retention regression that showed each of these explanatory variable were a negative predictor of officer retention behavior. It is unclear why these

two variables exhibit positive explanatory power in predicting officer retention-to-retirement behavior.

Table 22 displays the hypothesized effects prior to running the regressions as well as the actual effects on each of the independent variables after the regressions were ran.

Table 22. Hypothesized Effects and Actual Regression Effects of Independent Variables on 10-Year Retention and Retention-to-Retirement Model when compared to the Base Case.

Variable Name	**Expected Sign**	**Actual Effect**	
		10 Year Retention	**Retention-to-Retirement**
Demographic Category			
Marital Status			
Married	+	+	no effect
Ethnicity Group			
Black	-	no effect	no effect
Hispanic	-	no effect	no effect
Service Information Category			
General Classification Test Score [GCT]	+	no effect	no effect
Military Occupation Field			
Combat Arms	-	-	+
Combat Service Support	+	-	+
TBS Information Category			
Graduated in Top Third	+	+	+
Graduated in Bottom Third	-	-	-
Commissioning Source Information Category			
Platoon Leaders Course Program	-	-	-
Officer Candidate Course	-	-	-
Naval Reserve Officer Training Corps Program	?	no effect	no effect
Marine Enlisted Commissioning Education Program	+	+	no effect
Enlisted Commissioning Program	+	no effect	no effect

B. RECOMMENDATIONS

1. Accession Policy Change

Based on the results of the analysis, there is an untapped resource within the Marine Corps that can provide a retention-oriented source of commissioned officers. The Marine Enlisted Commissioning Education Program officers have a very high likelihood of staying in service until their 10th year of service in comparison to the Naval Academy. The officers from MECEP provide a strong and stable mid-grade officer corps that can provide continuity to their respective occupational fields. Based on the retention behavior of the officers commissioned through the MECEP program, the Marine Corps should consider assessing more officers through this source to provide flexibility to the commissioning source mix.

I am proposing that if total officers accessions are held constant, the number of officers accessed through the MECEP program should be increased to 19 percent of the total fiscal year accessions, approximately double its current percentage. This would be followed by a 10 percent decrease in the total number of officers accessed through the OCC program. OCC officers account for 36 percent of all Marine officers commissioned in FY 2001 while MECEP officers accounts for 9.3 percent of the FY 2001. OCC graduates are 58 percent less likely to stay in until the 10th year of service in comparison to the Naval Academy. Since the Naval Academy and NROTC programs are accession limited by a memorandum of agreement (Cooper, 1993) it would seem more reasonable to reduce those commissioning programs that are within the Marine Corps' control, and that produce officers who exhibit poor retention behavior in comparison to all other commissioning programs.

This increased inflow of MECEP candidates would place minimal burden on the ROTC unit the officer candidate attends. The MECEP participant is not required to enroll in all of the Naval Science courses that all other ROTC midshipmen must attend. This means there would be no need for additional officer instructors at the unit. Also, there would be little or no additional funding required to pay for tuition or summer training since the MECEP participants are required to pay for all educational and living expenses while attending college.

While the MECEP program appears to be a promising source for increasing retention at minimal cost, it should be noted that this thesis has not conducted a full cost effectiveness analysis of each commissioning source. Such analysis should be conducted before a final determination can be made of which program(s) should be expanded on contracted.

2. Data Collection

With regard to the current Marine Corps data collection process, there seems to be a deficiency in accounting for prior military experience. Headquarters Marine Corps does not distinguish among officers that have prior military experience, as an officer or enlisted. Further confusion is over whether the prior experience was in another service or if it was prior Marine Corps enlisted experience. This may have only been a shortcoming of the MCCOAC data file that was used with this study. For this study, the only accurate way to determine whether an officer had prior enlisted experience was based on the commissioning program in which they participated. Had there been a data field to provide previous service data, a more detailed analysis of the effects of prior enlisted experience on officer retention behavior could have be researched to determine the potential benefits to the officer corps. This information could then be used to determine the effects of prior enlisted experience on officer performance and promotion.

C. FUTURE RESEARCH

Further research in this area should consist of a longitudinal study of the Marine Corps enlisted commissioning programs to track their effects on officer performance, retention and promotion at TBS and in the fleet in comparison to other commissioning programs. This longitudinal study will further assist policy makers in developing a more effective commissioning program mix that will meet current demands and be flexible enough to provide for potential officer accession spikes. In addition, as discussed above, a full cost-effectiveness or cost-benefit analysis of each commissioning program should be undertaken.

Further research areas concerning Marine officer retention should focus on the combat service support MOSs and the unexpected relatively low likelihood for such

officers to stay in the service. These specialty-skills occupations require a large, up-front investment in human capital; but they are 26 percent less likely to remain in until the 10th year of commissioned service. Improving retention, for these specialties would have dramatic cost implication. Further analysis of the impact of occupational / MOS assignment on officer retention behavior is necessary to retain these highly intelligent and well-trained officers.

APPENDIX A. PRIMARY MILITARY OCCUPATIONAL SPECIALTIES ASSIGNED TO OCCUPATIONAL GROUPS (OCCFLD)

Combat Arms Occupational Group			
03XX	Infantry	08XX	Artillery
18XX	Tank and Assault Amphibian Vehicle		
Combat Support Occupational Group			
02XX	Intelligence	05XX	Marine Air Ground Task Force Plans
13XX	Engineer, Construction, Facilities and Equipment	21XX	Ordnance
23XX	Ammunition and Explosive Ordnance Disposal	25XX	Operational Communications
26XX	Signals Intelligence / Ground Electronics Warfare	60/61XX	Aircraft Maintenance
63/64XX	Avionics	65XX	Aviation Ordnance
72XX	Air Control / Air Support / Anti-air Warfare / Air Traffic Control	73XX	Navigation Officer / Enlisted Flight Crews
75XX	Naval Pilots / Naval Flight Officers		
Combat Service Support Occupational Group			
01XX	Personnel and Administration	04XX	Logistics
06XX	Command and Control Systems	11XX	Utilities
28XX	Ground Electronics Maintenance	30XX	Supply Administration and Operations
31XX	Traffic Management	33XX	Food Service
34XX	Financial Management	35XX	Motor Transport
40XX	Data Systems	41XX	Marine Corps Exchange
43XX	Public Affairs	44XX	Legal Services
46XX	Visual Information	55XX	Music
57XX	Nuclear, Biological and Chemical	58XX	Military Police and Corrections
59XX	Electronics Maintenance	66XX	Aviation Logistics
68XX	Meteorological and Oceanographic (METOC) Services	70XX	Airfield Services

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APPENDIX B. DESCRIPTIVE CROSS TABULATION OF MODEL VARIABLES

	Retirement Eligibility (ret_elig)			**10 Years Commissioned Service (ten_ycs)**		
Categorical Variables	***df***	***Pearson Chi-Square (sig.)***	***Contingency Coefficient (sig.)***	***df***	***Pearson Chi-Square (sig.)***	***Contingency Coefficient (sig.)***
Commissioning Program (commprog)	5	24.056 (.000)	.137 (.000)	5	154.068 (.000)	.162 (.000)
TBS Graduation Thirds (tbs_th)	3	48.697 (.000)	.1938 (.000)	3	183.336 (.000)	.176 (.000)
GCT Score (gct_cat)	1	.096 (.756)	.010 (.756)	1	29.618 (.000)	.074 (.000)
Ethnicity Group (egroup)	3	1.511 (.680)	.035 (.680)	3	12.885 (.005)	.047 (.005)
Marital Status (marital)	2	91.840 (.000)	.261 (.000)	2	144.485 (.000)	.157 (.000)
Occupational Field (occfld)	3	136.578 (.000)	.313 (.000)	3	235.192 (.000)	.199 (.000)

Source: SPSS Descriptive Output

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APPENDIX C. 10-YEAR RETENTION MODEL - COMMISSIONING PROGRAM CROSS TABULATION

TEN_YCS * COMMPROG

Crosstab

			COMMPROG						
			PLC	OCC	NROTC	MECEP	ECP	USNA	Total
TEN_YCS	0	Count	1207	859	567	19	98	279	3029
		% within TEN_YCS	39.8%	28.4%	18.7%	.6%	3.2%	9.2%	100.0%
		% within COMMPROG	57.4%	58.1%	49.5%	13.0%	41.4%	46.4%	53.0%
		% of Total	21.1%	15.0%	9.9%	.3%	1.7%	4.9%	53.0%
	1	Count	897	620	578	127	139	322	2683
		% within TEN_YCS	33.4%	23.1%	21.5%	4.7%	5.2%	12.0%	100.0%
		% within COMMPROG	42.6%	41.9%	50.5%	87.0%	58.6%	53.6%	47.0%
		% of Total	15.7%	10.9%	10.1%	2.2%	2.4%	5.6%	47.0%
Total		Count	2104	1479	1145	146	237	601	5712
		% within TEN_YCS	36.8%	25.9%	20.0%	2.6%	4.1%	10.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	36.8%	25.9%	20.0%	2.6%	4.1%	10.5%	100.0%

TBS_TH * COMMPROG

Crosstab

			COMMPROG						
			PLC	OCC	NROTC	MECEP	ECP	USNA	Total
TBS_TH	Missing	Count						2	2
		% within TBS_TH						100.0%	100.0%
		% within COMMPROG						.3%	.0%
		% of Total						.0%	.0%
	Top Third	Count	590	408	479	99	115	207	1898
		% within TBS_TH	31.1%	21.5%	25.2%	5.2%	6.1%	10.9%	100.0%
		% within COMMPROG	28.0%	27.6%	41.8%	67.8%	48.5%	34.4%	33.2%
		% of Total	10.3%	7.1%	8.4%	1.7%	2.0%	3.6%	33.2%
	Middle Third	Count	721	507	378	35	70	194	1905
		% within TBS_TH	37.8%	26.6%	19.8%	1.8%	3.7%	10.2%	100.0%
		% within COMMPROG	34.3%	34.3%	33.0%	24.0%	29.5%	32.3%	33.4%
		% of Total	12.6%	8.9%	6.6%	.6%	1.2%	3.4%	33.4%
	Bottom Third	Count	793	564	288	12	52	198	1907
		% within TBS_TH	41.6%	29.6%	15.1%	.6%	2.7%	10.4%	100.0%
		% within COMMPROG	37.7%	38.1%	25.2%	8.2%	21.9%	32.9%	33.4%
		% of Total	13.9%	9.9%	5.0%	.2%	.9%	3.5%	33.4%
Total		Count	2104	1479	1145	146	237	601	5712
		% within TBS_TH	36.8%	25.9%	20.0%	2.6%	4.1%	10.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	36.8%	25.9%	20.0%	2.6%	4.1%	10.5%	100.0%

GCT_CAT * COMMPROG

Crosstab

			COMMPROG						Total
			PLC	OCC	NROTC	MECEP	ECP	USNA	
GCT_CAT	Low GCT score	Count	948	662	299	28	80	98	2115
		% within GCT_CAT	44.8%	31.3%	14.1%	1.3%	3.8%	4.6%	100.0%
		% within COMMPROG	48.0%	47.7%	28.4%	21.7%	38.5%	17.6%	39.9%
		% of Total	17.9%	12.5%	5.6%	.5%	1.5%	1.8%	39.9%
	High GCT score	Count	1026	727	752	101	128	458	3192
		% within GCT_CAT	32.1%	22.8%	23.6%	3.2%	4.0%	14.3%	100.0%
		% within COMMPROG	52.0%	52.3%	71.6%	78.3%	61.5%	82.4%	60.1%
		% of Total	19.3%	13.7%	14.2%	1.9%	2.4%	8.6%	60.1%
Total		Count	1974	1389	1051	129	208	556	5307
		% within GCT_CAT	37.2%	26.2%	19.8%	2.4%	3.9%	10.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	37.2%	26.2%	19.8%	2.4%	3.9%	10.5%	100.0%

EGROUP * COMMPROG

Crosstab

			COMMPROG						Total
			PLC	OCC	NROTC	MECEP	ECP	USNA	
EGROUP	Other	Count	49	39	20	2	1	27	138
		% within EGROUP	35.5%	28.3%	14.5%	1.4%	.7%	19.6%	100.0%
		% within COMMPROG	2.3%	2.6%	1.7%	1.4%	.4%	4.5%	2.4%
		% of Total	.9%	.7%	.4%	.0%	.0%	.5%	2.4%
	White	Count	1928	1311	1060	121	213	495	5128
		% within EGROUP	37.6%	25.6%	20.7%	2.4%	4.2%	9.7%	100.0%
		% within COMMPROG	91.6%	88.6%	92.6%	82.9%	89.9%	82.4%	89.8%
		% of Total	33.8%	23.0%	18.6%	2.1%	3.7%	8.7%	89.8%
	Black	Count	74	89	47	11	17	49	287
		% within EGROUP	25.8%	31.0%	16.4%	3.8%	5.9%	17.1%	100.0%
		% within COMMPROG	3.5%	6.0%	4.1%	7.5%	7.2%	8.2%	5.0%
		% of Total	1.3%	1.6%	.8%	.2%	.3%	.9%	5.0%
	Hispanic	Count	53	40	18	12	6	30	159
		% within EGROUP	33.3%	25.2%	11.3%	7.5%	3.8%	18.9%	100.0%
		% within COMMPROG	2.5%	2.7%	1.6%	8.2%	2.5%	5.0%	2.8%
		% of Total	.9%	.7%	.3%	.2%	.1%	.5%	2.8%
Total		Count	2104	1479	1145	146	237	601	5712
		% within EGROUP	36.8%	25.9%	20.0%	2.6%	4.1%	10.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	36.8%	25.9%	20.0%	2.6%	4.1%	10.5%	100.0%

MARITAL * COMMPROG

Crosstab

			COMMPROG						Total
			PLC	OCC	NROTC	MECEP	ECP	USNA	
MARITAL	Single	Count	1305	576	693	20	67	343	3004
		% within MARITAL	43.4%	19.2%	23.1%	.7%	2.2%	11.4%	100.0%
		% within COMMPROG	62.0%	38.9%	60.5%	13.7%	28.3%	57.1%	52.6%
		% of Total	22.8%	10.1%	12.1%	.4%	1.2%	6.0%	52.6%
	Married	Count	655	608	323	121	153	174	2034
		% within MARITAL	32.2%	29.9%	15.9%	5.9%	7.5%	8.6%	100.0%
		% within COMMPROG	31.1%	41.1%	28.2%	82.9%	64.6%	29.0%	35.6%
		% of Total	11.5%	10.6%	5.7%	2.1%	2.7%	3.0%	35.6%
	Other	Count	144	295	129	5	17	84	674
		% within MARITAL	21.4%	43.8%	19.1%	.7%	2.5%	12.5%	100.0%
		% within COMMPROG	6.8%	19.9%	11.3%	3.4%	7.2%	14.0%	11.8%
		% of Total	2.5%	5.2%	2.3%	.1%	.3%	1.5%	11.8%
Total		Count	2104	1479	1145	146	237	601	5712
		% within MARITAL	36.8%	25.9%	20.0%	2.6%	4.1%	10.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	36.8%	25.9%	20.0%	2.6%	4.1%	10.5%	100.0%

OCCFLD * COMMPROG

Crosstab

			COMMPROG						Total
			PLC	OCC	NROTC	MECEP	ECP	USNA	
OCCFLD	Missing	Count	151	80	121	11	19	48	430
		% within OCCFLD	35.1%	18.6%	28.1%	2.6%	4.4%	11.2%	100.0%
		% within COMMPROG	7.2%	5.4%	10.6%	7.5%	8.0%	8.0%	7.5%
		% of Total	2.6%	1.4%	2.1%	.2%	.3%	.8%	7.5%
	Combat Arms	Count	512	428	414	47	70	150	1621
		% within OCCFLD	31.6%	26.4%	25.5%	2.9%	4.3%	9.3%	100.0%
		% within COMMPROG	24.3%	28.9%	36.2%	32.2%	29.5%	25.0%	28.4%
		% of Total	9.0%	7.5%	7.2%	.8%	1.2%	2.6%	28.4%
	Combat Support	Count	1061	669	436	50	93	299	2608
		% within OCCFLD	40.7%	25.7%	16.7%	1.9%	3.6%	11.5%	100.0%
		% within COMMPROG	50.4%	45.2%	38.1%	34.2%	39.2%	49.8%	45.7%
		% of Total	18.6%	11.7%	7.6%	.9%	1.6%	5.2%	45.7%
	Combat Service Support	Count	380	302	174	38	55	104	1053
		% within OCCFLD	36.1%	28.7%	16.5%	3.6%	5.2%	9.9%	100.0%
		% within COMMPROG	18.1%	20.4%	15.2%	26.0%	23.2%	17.3%	18.4%
		% of Total	6.7%	5.3%	3.0%	.7%	1.0%	1.8%	18.4%
Total		Count	2104	1479	1145	146	237	601	5712
		% within OCCFLD	36.8%	25.9%	20.0%	2.6%	4.1%	10.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	36.8%	25.9%	20.0%	2.6%	4.1%	10.5%	100.0%

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APPENDIX D. RETENTION-TO-RETIREMENT MODEL - COMMISSIONING PROGRAM CROSS TABULATION

RET_ELIG * COMMPROG

			COMMISSIONNG PROGRAM						
			PLC	OCC	NROTC	MECEP	ECP	USNA	Total
RET_ELIG	0	Count	312	209	180	7	32	117	857
		% within	36.4%	24.4%	21.0%	.8%	3.7%	13.7%	100.0%
		% within	70.3%	68.5%	70.6%	33.3%	49.2%	68.8%	68.0%
		% of Total	24.8%	16.6%	14.3%	.6%	2.5%	9.3%	68.0%
	1	Count	132	96	75	14	33	53	403
		% within	32.8%	23.8%	18.6%	3.5%	8.2%	13.2%	100.0%
		% within	29.7%	31.5%	29.4%	66.7%	50.8%	31.2%	32.0%
		% of Total	10.5%	7.6%	6.0%	1.1%	2.6%	4.2%	32.0%
Total		Count	444	305	255	21	65	170	1260
		% within	35.2%	24.2%	20.2%	1.7%	5.2%	13.5%	100.0%
		% within	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	35.2%	24.2%	20.2%	1.7%	5.2%	13.5%	100.0%

TBS_TH * COMMPROG

Crosstab

			COMMPROG						
			PLC	OCC	NROTC	MECEP	ECP	USNA	Total
TBS_TH	Missing	Count						2	2
		% within TBS_TH						100.0%	100.0%
		% within COMMPROG						1.2%	.2%
		% of Total						.2%	.2%
	Top Third	Count	117	90	107	12	40	62	428
		% within TBS_TH	27.3%	21.0%	25.0%	2.8%	9.3%	14.5%	100.0%
		% within COMMPROG	26.4%	29.5%	42.0%	57.1%	61.5%	36.5%	34.0%
		% of Total	9.3%	7.1%	8.5%	1.0%	3.2%	4.9%	34.0%
	Middle Third	Count	151	112	83	7	15	52	420
		% within TBS_TH	36.0%	26.7%	19.8%	1.7%	3.6%	12.4%	100.0%
		% within COMMPROG	34.0%	36.7%	32.5%	33.3%	23.1%	30.6%	33.3%
		% of Total	12.0%	8.9%	6.6%	.6%	1.2%	4.1%	33.3%
	Bottom Third	Count	176	103	65	2	10	54	410
		% within TBS_TH	42.9%	25.1%	15.9%	.5%	2.4%	13.2%	100.0%
		% within COMMPROG	39.6%	33.8%	25.5%	9.5%	15.4%	31.8%	32.5%
		% of Total	14.0%	8.2%	5.2%	.2%	.8%	4.3%	32.5%
Total		Count	444	305	255	21	65	170	1260
		% within TBS_TH	35.2%	24.2%	20.2%	1.7%	5.2%	13.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	35.2%	24.2%	20.2%	1.7%	5.2%	13.5%	100.0%

GCT_CAT * COMMPROG

Crosstab

			COMMPROG						
			PLC	OCC	NROTC	MECEP	ECP	USNA	Total
GCT_CAT	Low GCT score	Count	141	89	48	5	11	19	313
		% within GCT_CAT	45.0%	28.4%	15.3%	1.6%	3.5%	6.1%	100.0%
		% within COMMPROG	41.1%	36.3%	26.5%	23.8%	20.4%	14.4%	32.1%
		% of Total	14.4%	9.1%	4.9%	.5%	1.1%	1.9%	32.1%
	High GCT score	Count	202	156	133	16	43	113	663
		% within GCT_CAT	30.5%	23.5%	20.1%	2.4%	6.5%	17.0%	100.0%
		% within COMMPROG	58.9%	63.7%	73.5%	76.2%	79.6%	85.6%	67.9%
		% of Total	20.7%	16.0%	13.6%	1.6%	4.4%	11.6%	67.9%
Total		Count	343	245	181	21	54	132	976
		% within GCT_CAT	35.1%	25.1%	18.5%	2.2%	5.5%	13.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	35.1%	25.1%	18.5%	2.2%	5.5%	13.5%	100.0%

EGROUP * COMMPROG

Crosstab

			COMMPROG						
			PLC	OCC	NROTC	MECEP	ECP	USNA	Total
EGROUP	Other	Count	2	4	2			7	15
		% within EGROUP	13.3%	26.7%	13.3%			46.7%	100.0%
		% within COMMPROG	.5%	1.3%	.8%			4.1%	1.2%
		% of Total	.2%	.3%	.2%			.6%	1.2%
	White	Count	425	291	241	18	63	147	1185
		% within EGROUP	35.9%	24.6%	20.3%	1.5%	5.3%	12.4%	100.0%
		% within COMMPROG	95.7%	95.4%	94.5%	85.7%	96.9%	86.5%	94.0%
		% of Total	33.7%	23.1%	19.1%	1.4%	5.0%	11.7%	94.0%
	Black	Count	10	8	12	1	1	10	42
		% within EGROUP	23.8%	19.0%	28.6%	2.4%	2.4%	23.8%	100.0%
		% within COMMPROG	2.3%	2.6%	4.7%	4.8%	1.5%	5.9%	3.3%
		% of Total	.8%	.6%	1.0%	.1%	.1%	.8%	3.3%
	Hispanic	Count	7	2		2	1	6	18
		% within EGROUP	38.9%	11.1%		11.1%	5.6%	33.3%	100.0%
		% within COMMPROG	1.6%	.7%		9.5%	1.5%	3.5%	1.4%
		% of Total	.6%	.2%		.2%	.1%	.5%	1.4%
Total		Count	444	305	255	21	65	170	1260
		% within EGROUP	35.2%	24.2%	20.2%	1.7%	5.2%	13.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	35.2%	24.2%	20.2%	1.7%	5.2%	13.5%	100.0%

MARITAL * COMMPROG

Crosstab

			COMMPROG						Total
			PLC	OCC	NROTC	MECEP	ECP	USNA	
MARITAL	Single	Count	111	86	63	2	8	46	316
		% within MARITAL	35.1%	27.2%	19.9%	.6%	2.5%	14.6%	100.0%
		% within COMMPROG	25.0%	28.2%	24.7%	9.5%	12.3%	27.1%	25.1%
		% of Total	8.8%	6.8%	5.0%	.2%	.6%	3.7%	25.1%
	Married	Count	244	166	136	19	46	89	700
		% within MARITAL	34.9%	23.7%	19.4%	2.7%	6.6%	12.7%	100.0%
		% within COMMPROG	55.0%	54.4%	53.3%	90.5%	70.8%	52.4%	55.6%
		% of Total	19.4%	13.2%	10.8%	1.5%	3.7%	7.1%	55.6%
	Other	Count	89	53	56		11	35	244
		% within MARITAL	36.5%	21.7%	23.0%		4.5%	14.3%	100.0%
		% within COMMPROG	20.0%	17.4%	22.0%		16.9%	20.6%	19.4%
		% of Total	7.1%	4.2%	4.4%		.9%	2.8%	19.4%
Total		Count	444	305	255	21	65	170	1260
		% within MARITAL	35.2%	24.2%	20.2%	1.7%	5.2%	13.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	35.2%	24.2%	20.2%	1.7%	5.2%	13.5%	100.0%

OCCFLD * COMMPROG

Crosstab

			COMMPROG						Total
			PLC	OCC	NROTC	MECEP	ECP	USNA	
OCCFLD	Missing	Count	69	42	48		7	32	198
		% within OCCFLD	34.8%	21.2%	24.2%		3.5%	16.2%	100.0%
		% within COMMPROG	15.5%	13.8%	18.8%		10.8%	18.8%	15.7%
		% of Total	5.5%	3.3%	3.8%		.6%	2.5%	15.7%
	Combat Arms	Count	113	62	89	9	24	36	333
		% within OCCFLD	33.9%	18.6%	26.7%	2.7%	7.2%	10.8%	100.0%
		% within COMMPROG	25.5%	20.3%	34.9%	42.9%	36.9%	21.2%	26.4%
		% of Total	9.0%	4.9%	7.1%	.7%	1.9%	2.9%	26.4%
	Combat Support	Count	212	161	89	4	21	78	565
		% within OCCFLD	37.5%	28.5%	15.8%	.7%	3.7%	13.8%	100.0%
		% within COMMPROG	47.7%	52.8%	34.9%	19.0%	32.3%	45.9%	44.8%
		% of Total	16.8%	12.8%	7.1%	.3%	1.7%	6.2%	44.8%
	Combat Service Support	Count	50	40	29	8	13	24	164
		% within OCCFLD	30.5%	24.4%	17.7%	4.9%	7.9%	14.6%	100.0%
		% within COMMPROG	11.3%	13.1%	11.4%	38.1%	20.0%	14.1%	13.0%
		% of Total	4.0%	3.2%	2.3%	.6%	1.0%	1.9%	13.0%
Total		Count	444	305	255	21	65	170	1260
		% within OCCFLD	35.2%	24.2%	20.2%	1.7%	5.2%	13.5%	100.0%
		% within COMMPROG	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	35.2%	24.2%	20.2%	1.7%	5.2%	13.5%	100.0%

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APPENDIX E. 10-YEAR RETENTION LOGIT REGRESSION - SPSS RESULTS

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	5710	100.0
	Missing Cases	2	.0
	Total	5712	100.0
Unselected Cases		0	.0
Total		5712	100.0

a. If weight is in effect, see classification table for the total number of cases.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	124.315	5	.000
	Block	124.315	5	.000
	Model	620.591	17	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	7274.413	.103	.137

Classification Table[a]

			Predicted		
			TEN_YCS		Percentage
	Observed		0	1	Correct
Step 1	TEN_YCS	0	2029	998	67.0
		1	1189	1494	55.7
	Overall Percentage				61.7

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	BLACK	-.131	.135	.943	1	.332	.877
	HISPANIC	-.201	.178	1.280	1	.258	.818
	ETH_OTH	.017	.186	.008	1	.927	1.017
	MARRIED	.472	.062	58.131	1	.000	1.603
	MAR_OTH	.084	.104	.652	1	.419	1.087
	C_MOS	-.046	.066	.481	1	.488	.955
	CSS_MOS	-.301	.077	15.258	1	.000	.740
	OCC_MISS	-1.861	.168	122.173	1	.000	.156
	L_GCT	-.009	.063	.021	1	.884	.991
	GCT_MISS	-.233	.145	2.581	1	.108	.792
	TBS_TOP	.190	.069	7.631	1	.006	1.209
	TBS_BOT	-.468	.070	44.652	1	.000	.626
	PLC_PROG	-.473	.099	22.617	1	.000	.623
	OCC_PROG	-.571	.104	30.145	1	.000	.565
	NROTC	-.154	.107	2.072	1	.150	.857
	MECEP	1.510	.273	30.669	1	.000	4.526
	ECP_PROG	.010	.166	.003	1	.953	1.010
	Constant	.320	.102	9.892	1	.002	1.377

a. Variable(s) entered on step 1: PLC_PROG, OCC_PROG, NROTC, MECEP, ECP_PROG.

APPENDIX F. RETENTION-TO-RETIREMENT LOGIT REGRESSION - SPSS RESULTS

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	1260	100.0
	Missing Cases	0	.0
	Total	1260	100.0
Unselected Cases		0	.0
Total		1260	100.0

a. If weight is in effect, see classification table for the total number of cases.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	7.541	5	.183
	Block	7.541	5	.183
	Model	246.356	17	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	1333.054	.178	.249

Classification Table[a]

			Predicted		
			RET_ELIG		Percentage
	Observed		0	1	Correct
Step 1	RET_ELIG	0	769	88	89.7
		1	272	131	32.5
	Overall Percentage				71.4

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	BLACK	-.206	.404	.259	1	.611	.814
	HISPANIC	-.455	.628	.525	1	.469	.634
	ETH_OTH	.693	.705	.968	1	.325	2.000
	MARRIED	.245	.150	2.677	1	.102	1.278
	MAR_OTH	.355	.369	.926	1	.336	1.427
	C_MOS	.695	.151	21.138	1	.000	2.004
	CSS_MOS	.573	.193	8.823	1	.003	1.774
	OCC_MISS	-3.479	1.073	10.503	1	.001	.031
	L_GCT	.189	.155	1.482	1	.223	1.208
	GCT_MISS	-1.066	.315	11.481	1	.001	.344
	TBS_TOP	.440	.157	7.872	1	.005	1.552
	TBS_BOT	-.387	.174	4.949	1	.026	.679
	PLC_PROG	-.121	.217	.308	1	.579	.886
	OCC_PROG	-.065	.227	.082	1	.775	.937
	NROTC	-.239	.238	1.005	1	.316	.787
	MECEP	.746	.515	2.096	1	.148	2.108
	ECP_PROG	.411	.333	1.525	1	.217	1.508
	Constant	-.966	.235	16.945	1	.000	.381

a. Variable(s) entered on step 1: PLC_PROG, OCC_PROG, NROTC, MECEP, ECP_PROG.

LIST OF REFERENCES

Astrella, M.G. (June 1998). *An Analysis of the Effect of Prior-Enlisted Service on Navy Officer Performance*. Master's Thesis, Naval Postgraduate School, Monterey, CA.

Black, L. (2001). *Admissions Information System (AIS) User's Guide: A Manual Describing the U.S. Naval Academy's Admissions process as supported by the Admissions Information System (AIS)*. Annapolis: U.S. Naval Academy Information Technology Services Division.

Cash, D.J. (April 2002). *Fiscal Year 2001 Officer Accessions.* Marine Corps Recruiting Command. Headquarter United States Marine Corps, Washington D.C.

Duffy, J.C. (June 2000). *A Statistical Analysis of Retention in the Surface Warfare Community.* Master's Thesis, Naval Postgraduate School, Monterey, CA.

Foster, M.J. (June 1990). *An Analysis of the Relative Productivity of Officers from Different Accession Sources*. Master's Thesis, Naval Postgraduate School, Monterey, CA.

Goldhaber, D.D., Lawler, K.S., North, J.H. and Suess, J.N. (August 1995). *Successful Officer Careers: Analysis of Augmentation, Promotion, and Voluntary Continuation*. Center for Naval Analyses, Alexandria, VA.

Headquarters United States Marine Corps (HQMC). (September 1989). *Military Personnel Procurement Manual, Volume 3, Officer Procurement.* MCO (Marine Corps Order) P1100.73B, Washington D.C.

Headquarters United States Marine Corps (HQMC). (August 1994). *Marine Corps Enlisted Commissioning Education Program (MECEP).* MCO (Marine Corps Order) 1560.15L, Washington D.C.

Headquarters United States Marine Corps (HQMC). (May 2000). *Enlisted-to-Officer Commissioning Programs.* MCO (Marine Corps Order) 1040.43A, Washington D.C.

Hiatt, C.M. and Quester, A.O. (February 2001). *Final Report: Street-to-Fleet Study. Volume II: Street-to-Fleet for Commissioned Officers*. Center for Naval Analyses, Alexandria, VA.

Howell, D.S. (January 1998). *Marine Option NROTC Scholarship and USNA Marine Graduates.* Memorandum, Headquarters United States Marine Corps, Washington D.C.

MarAdmin 630/00. (December 2000). *FY 2001 Marine Enlisted Commissioning Education Program Selection Results.* Marine Administrative Message, Headquarters United States Marine Corps, Washington D.C.

MarAdmin 193/01. (April 2001). *April 2001 MCP Selection Board Results.* Marine Administrative Message, Headquarter United States Marine Corps, Washington D.C.

MarAdmin 194/01. (April, 2001). *April 2001 ECP Selection Board Results.* Marine Administrative Message, Headquarters United States Marine Corps, Washington D.C.

MarAdmin 380/01. (August 2001). *August 2001 ECP Selection Board Results.* Marine Administrative Message, Headquarters United States Marine Corps, Washington D.C.

MarAdmin 381/01. (August, 2001). *August 2001 MCP Selection Board Results.* Marine Administrative Message, Headquarters United States Marine Corps, Washington D.C.

MarAdmin 511/01. (October 2001). *FY 2002 Marine Enlisted Commissioning Education Program Selection Results.* Marine Administrative Message, Headquarters United States Marine Corps, Washington D.C.

MarAdmin 007/02. (January, 2002). *December 2001 MCP Selection Board Results.* Marine Administrative Message, Headquarters United States Marine Corps, Washington D.C.

MarAdmin 008/02. (December, 2001). *December 2001 ECP Selection Board Results.* Marine Administrative Message, Headquarters United States Marine Crops, Washington D.C.

Nolan, J.F. (March 1993). *An Analysis of Surface Warfare Officer Measures of Effectiveness as Related to Commissioning Source, Undergraduate Education, and Navy Training*. Master's Thesis, Naval Postgraduate School, Monterey, CA.

Nordberg, W.H. (April, 2002). *PLC and OCC Officer Attainment Results.* Marine Corps Recruiting Command. Headquarters United States Marine Corps, Washington D.C.

Shapiro, B.J. (April 2002). *OE Newsletter.* Marine Corps Recruiting Command. Headquarters United States Marine Corps, Washington D.C.

Smith, M.M. (Augus, 1990). *Officer Commissioning Programs.* Defence Economics. Vol. 2: 313-324.

U. S. General Accounting Office. (November 1992). *Officer Commissioning Program: More Oversight and Coordination Needed*. Washington, D.C.: Government Printing Office.

United States Marine Corps Recruiting Command (MCRC). *Marine Option Naval Reserve Officer Training Corps Scholarship Program.* [Accessed online 10 April 2002]. (http://www.mcrc.usmc.mil/section/o/on/monrotc.htm).

United States Naval Academy (USNA). (March 2002). *The United States Naval Academy Strategic Plan 2002 - Building Leaders for America.* [Accessed online 6 April 2002)] (http://www.usna.edu/StrategicPlan/StrategicPlan.html).

Zinner, M.A. (March 1997). *U.S. Marine Corps Company-Grade Officer Retention*. Master's Thesis, Naval Postgraduate School, Monterey, CA.

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BIBLIOGRAPHY

Barrow, R.H., Watkins, J.D. (March 1975). *Naval Reserve Officers Training Corps (NROTC) Marine Corps Option.* Memorandum, Bureau of Naval Personnel, Washington, D.C.

Brown, D.C. (December 1987). *Military Officers: Commissioning Sources and Selection Criteria*. Alexandria, VA: Human Resources Research Organization.

Cooper, M.T. (April 1993). *CNP and DCS (M&RA) USMC 15 Jul 72 Memorandum of Agreement on Allocation of USNA Graduates to the Marine Corps.* Memorandum, Bureau of Naval Personnel, Washington D.C.

Carlisle Barracks. *Armed Forces Classification Test.* [Accessed online April 2002]. (http://carlisle-www.army.mil/usag/edctr/edctr_webs/ALC.htm#Armed).

Fidel, L.S., & Tabachnick, B.G. (2001). *Using Multivariate Statistics* (4th ed.*).* Massachusetts: Allyn and Bacon.

Headquarters United States Marine Corps (HQMC). (April 1992). *Administration of Marines Appointed Midshipmen or Cadets in Federal Service Academies or Naval Reserve Officers Training Corps (NROTC) Units.* MCO 1306.17F, Washington D.C.

Headquarters United States Marine Corps (HQMC). (August 1994). *Application for Nomination to the U.S. Naval Academy and Naval Academy Preparatory School.* MCO 1530.11G, Washington D.C.

Today's Military. *Discover Yourself: the ASVAB.* [Accessed online April 2002]. (http://www.todaysmilitary.com/explore_asvab.shtml).

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